Canovision 8

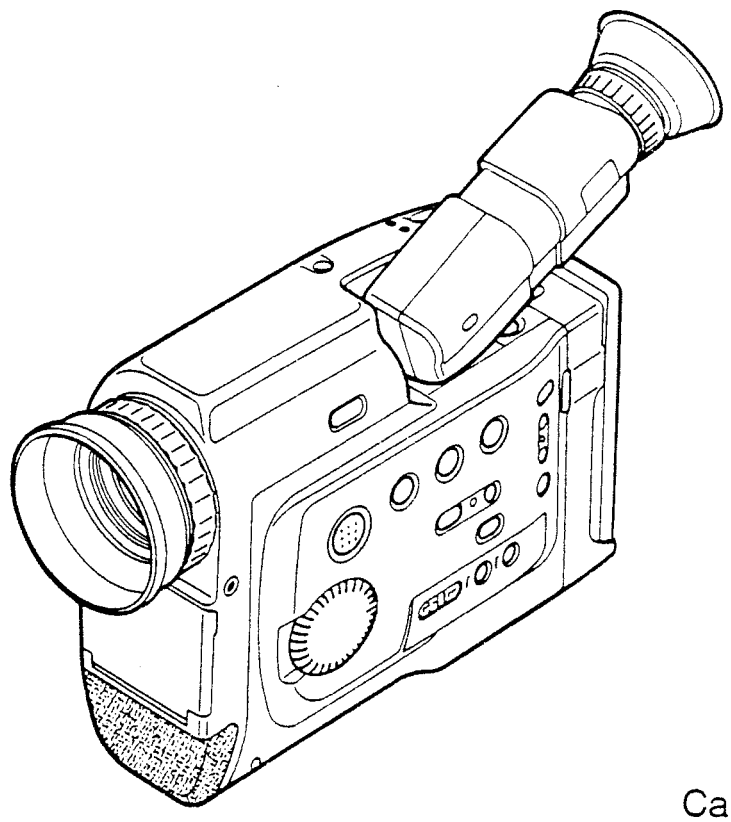
SERVICE MANUAL

UC1HiE,UC20E

(REF. NO. D15-5530,5430)

8mm Video Camcorder

PAL



DY8-1155-530-000

Canon Inc.
Video Technical Service Dept.
First Edition: Jun. 1992
Printed in Japan

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine CANON replacement parts.
   Especially critcal parts in the power circuit block should not be replaced with other makes.
   Critical parts are marked with ⚠ in the schematic diagrams.
2. The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in the viewfinder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be same type as the original, CANON approved one.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been oberheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

5-1 Leakage Current Cold Check

1) Unplug the AC cord and connect a jumper between the two prongs on the plug.
2) Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metalic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metalic part has a return path to the chassis, the reading should be between 1MΩ and 5.2MΩ. When the exposed metal does not have a return path to the chassis, the reading must be ∞.

5-2 Leakage Current Hot Check

1) Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2) Connect a 1.5KΩ 10 watt resistor, paralleled by 0.15μF capacitor, between each exposed metalic parts on the unit and a good earth ground such as a water pipe, as shown in the figure below.
3) Use an AC voltmeter, with 1000Ω/volt or more sensitivity, to measure the potential across the resistor.
4) Check all exposed metallic parts of the cover (Cable connection, Handle bracket, metallic cabinet. Screwheads, Metallic overlays, etc), and measure the voltage at each point.
5) Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6) The potential at any point should not exceed 0.75V RMS.
   A leakage current tester (FLUKE MODEL: 8000A equivalent) may be used to make the hot checks.
   Leakage current must not exceed 0.5 milliamp.
   In case a measurement is out side of the limits specified, there is a possibility of a shock hazard, and corrective action must be taken before returning the instrument to the customer.

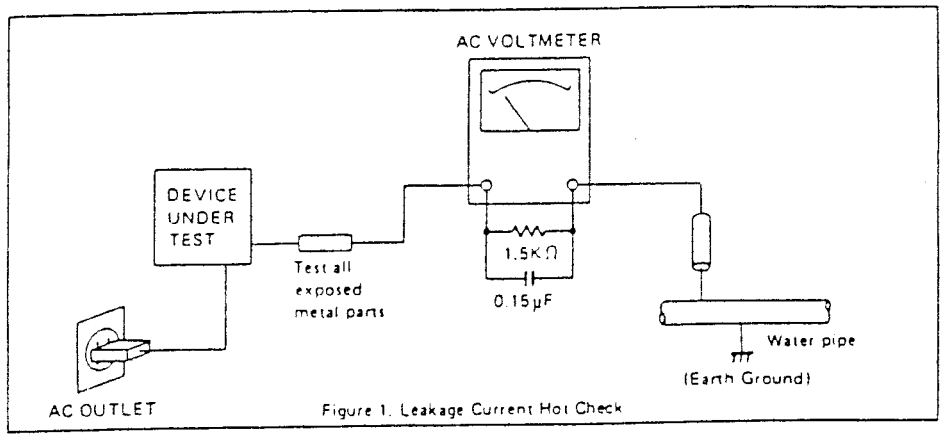


Figure 1. Leakage Current Hot Check

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Chapter I. GENERAL DESCRIPTION OF PRODUCT

1. Product Overview

Camcorder Model UC1HiE/UC20E are featuring small size, light weight and high performance with multiple functions.

1-1. Main features

1) Excellent Picture Quality and High Performance
   - Uses a 10 x inner focus lens with a high multiplication (zoom ratio: 10 x), wide angle (6 mm). and high resolution (UC1HiE).
   - Equipped with a 1/3 inch CCD with 470 thousand pixels.
   - Equipped with a one-touch set AWB in addition to a 24-division evaluation FAWB.
   - Capable of automatically screening wind sound.
   - Incorporates a jitter reduction circuit.
   - Capable of reproducing bilingual sound recorded on tape.
   - Eliminates oblique jagged lines by displaying a digital title in a frame.
   - Two types of zoom speed selectable in Recording Pause mode.

2) Multiple Functions
   - Uses a digital memo IC incorporating SRAM to provide a variety of title effects.
   - Provides seven automatic exposure (AE) control modes suitable for a variety of shooting conditions.
   - Provides a stereo microphone with directional angles variable in three stages and in linkage with zooming.
   - Provides shutter speeds variable in eight stages.

3) High Operability
   - Provides power focus by a focus ring (operable even during AF operation).
   - Provides a portable small-size light-weight thin body.
   - Uses a built-in lithium battery (rechargeable) requiring no replacement.
   - Uses four power sources available in any location.
   - Provides a detachable remote controller.
   - Provides double-function buttons to reduce the number of control buttons that would otherwise have to be mounted.

1-2. Appearance and names of parts

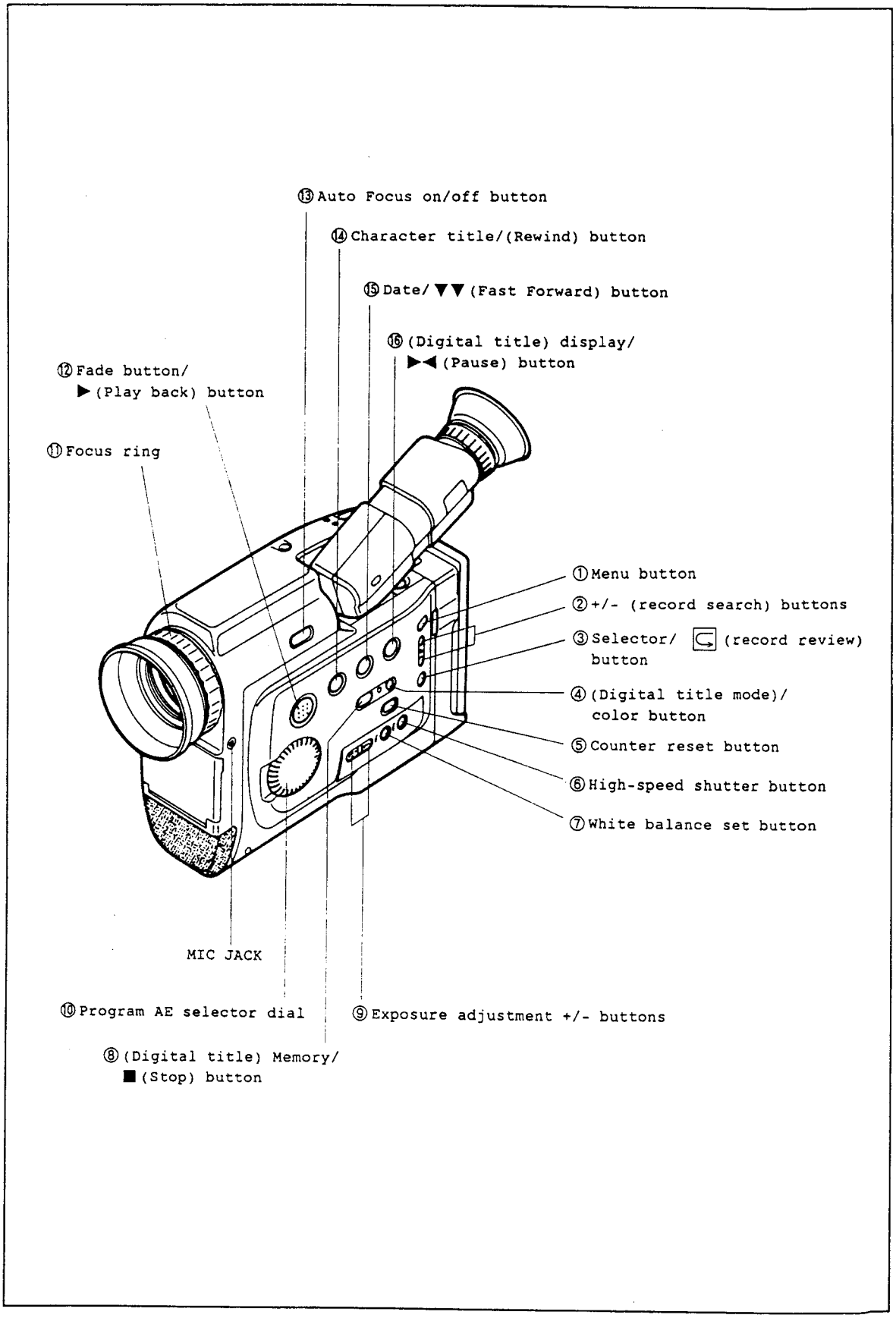


Figure I-1

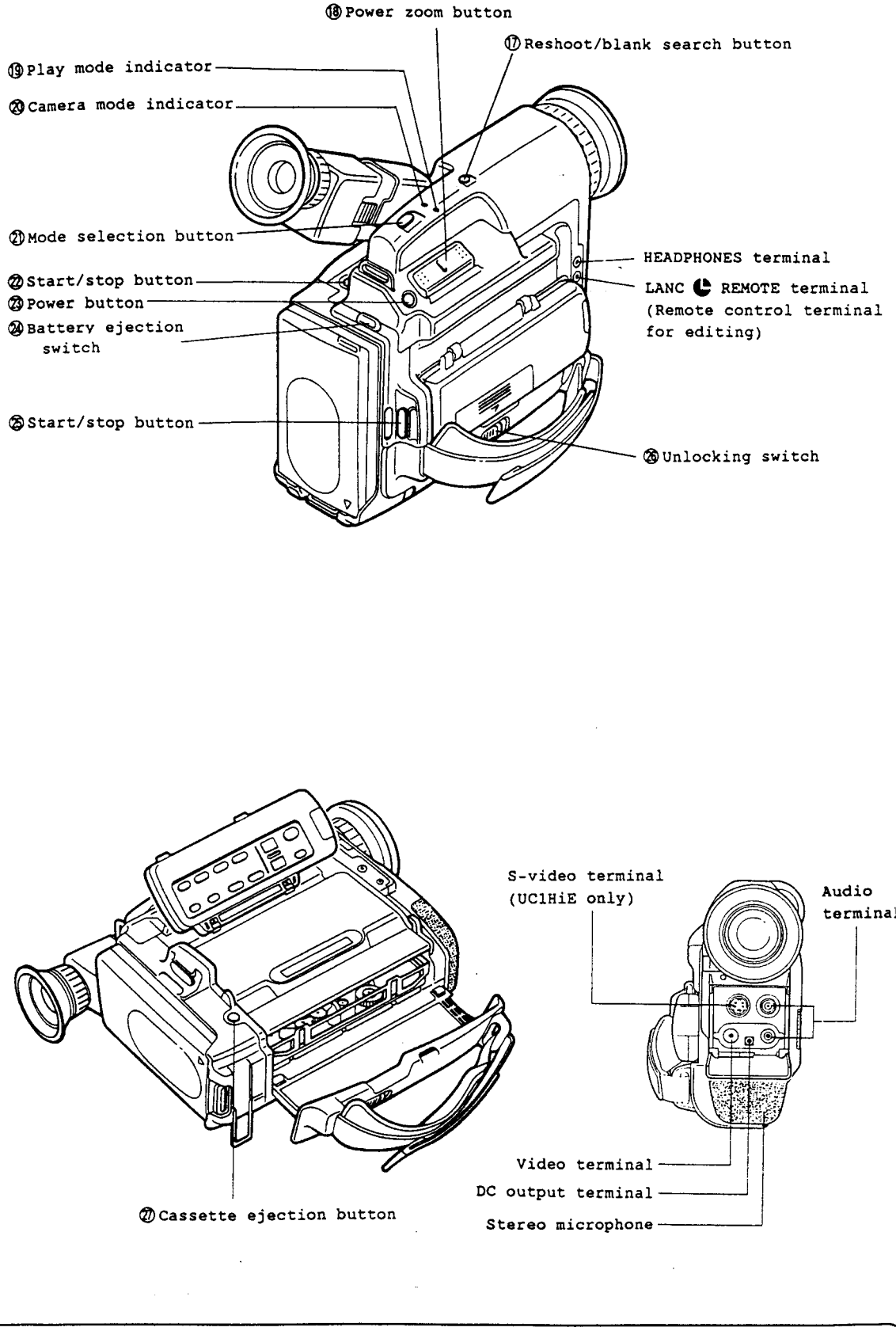
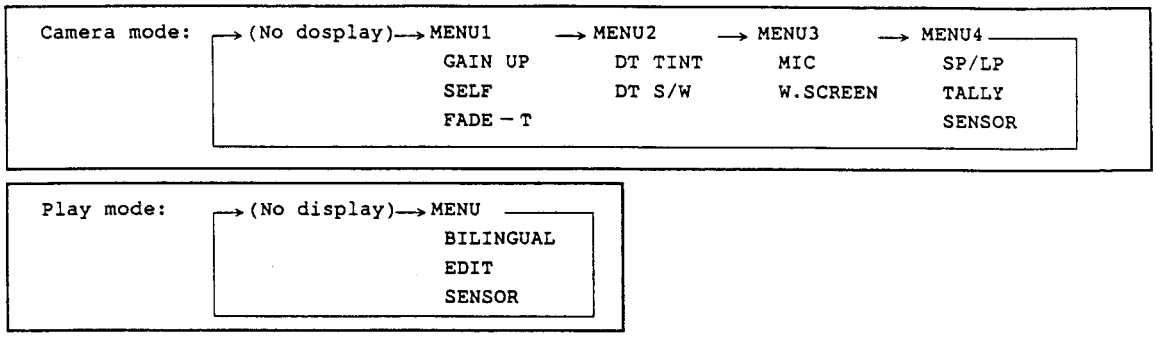

⑱ Power zoom button
⑰ Reshoot/blank search button
⑲ Play mode indicator
⑳ Camera mode indicator
㉑ Mode selection button
㉒ Start/stop button
㉓ Power button
㉔ Battery ejection switch
㉕ Start/stop button
HEADPHONES terminal
LANC REMOTE terminal
(Remote control terminal for editing)
㉖ Unlocking switch
S-video terminal
(UC1HiE only)
Audio terminal
Video terminal
DC output terminal
Stereo microphone
㉗ Cassette ejection button

Figure I-2

1-3. Description of control buttons

① Menu button

Press this button to open or close menus.



② + / - (record search) buttons

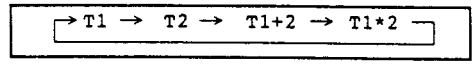
·To set a date:	Press the + button to advance a flashing number. Press the - button to reverse it.
·To search recorded pictures:	Press these buttons to search for recorded pictures. Press the + button to playback them in the forward direction. Press the - button to playback them in the backward direction.
·To display a menu:	Press these buttons to change a functional item that can be set. Press the + button to move the arrow (→) downward. Press the - button to move it upward.
·To set a character title:	Press these buttons to change characters that can be set. Press the + button to move the flashing character in a clockwise direction. Press the - button to move it counterclockwise. Press both the + and - buttons simultaneously to erase all the characters to the right of the flashing character.

③ Selector / ⏎ (record review) button

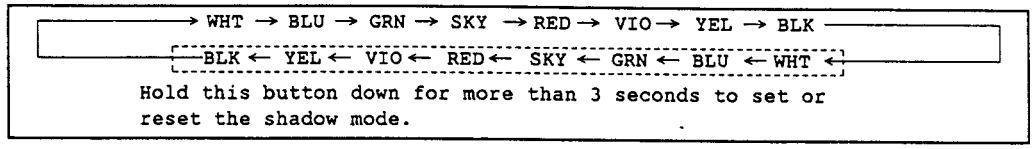
·To set a date:	Press this button to select the flashing number and the next item will flash.
·When recording is paused:	Press this button to review recorded pictures.
·To select a function:	Press this button to activate a function indicated by the arrow (→). Press this button in the self timer mode to switch among "No display", "SELF", and "SELF 30". Press this button in the display mode to switch between "S" and "W", between "↑" and "↓", and between "←" and "→". Press this button in the microphone mode to switch among "NARROW", "WIDE", and "ZOOM". Press this button in the sound mode to switch among "MAIN + SUB", "MAIN", and "SUB".
·To set a character title:	Press this button to select the flashing character.

④ (Digital title mode) / color button

When no title is displayed: Press this button to select a page to be stored or displayed using the cycle below.



When a title is displayed: Press this button to select a title color using the cycle below. [ ] enclosed section indicates color of the reversed.



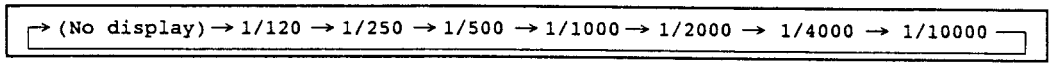
Hold this button down for more than 3 seconds to set or reset the shadow mode.

⑤ Counter reset button

Press this button to reset the counter to "0:00:00".

⑥ High-speed shutter button

Press this button to set a high shutter speed using the cycle below. An ordinary shutter speed (not displayed) is 1/50th of a second.



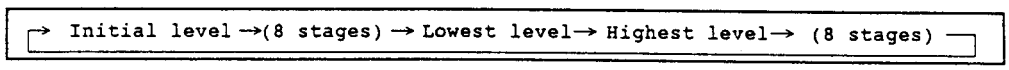
⑦ White balance set button

Press this button to set white balance or reset automatic white balance for evaluation.

⑧ (Digital title) Memory button ···· (CAMERA mode)

Press this button to store a displayed title in the memory.

Hold this button down for more than 3 seconds to change the level of contrast between a title and its background using the cycle below.

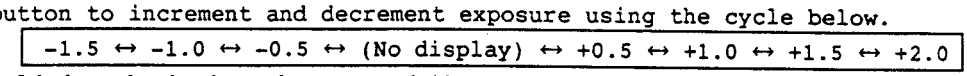


■ (Stop) button ···· In the play mode

Press this button to stop the motion of tape.

⑨ Exposure adjustment + / - buttons

When the program AE function is in the manual mode, press the + button and - button to increment and decrement exposure using the cycle below.



Hold down both the + button and the - button simultaneously for more than 0.5 seconds to return exposure to its standard value.

⑩ Program AE selector dial

Use this dial to select from seven AE (automatic exposure) modes.

⑪ Focus ring

Use this ring for focusing in the manual focus mode.

⑫ Fade button ···· (PLAY mode)

Hold down this button to cause pictures and sound to gradually disappear (fade out). Release this button after the pictures have completely disappeared to cause pictures and sound to gradually reappear.

This button can work in linkage with the start / stop button in the fade trigger mode.

▶ (Playback) button

Press this button to reproduce pictures and sound recorded on tape.

⑬ Auto focus on/off button

Press this button to switch between automatic focusing and manual focusing.

⑭ Character title button ···· In the camera mode

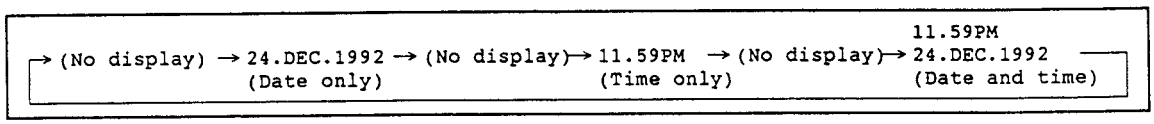
When shooting a scene: Press this button to either shoot a scene together with a preset character title or erase a character title from the screen.

When not shooting a scene: Hold down this button for more than 3 seconds to display the character title setting screen. Press it again to erase the character title setting screen.

⑮ Date button ···· In the camera mode

Press this button to display a current date using the cycle below.

Hold down this button for more than 3 seconds to display a current date with some of its sections flashing. When a date is displayed, press this button to set the auto date function using the displayed date.



▶▶ (Fast forward) button ···· In the camera mode

When the tape is not in motion, press this button to fast forward it. During playback, press this button for fast forward playback (at 9 times the ordinary speed). During fast forward, press this button to perform high-speed search playback (at 15 times the ordinary speed).

⑯ (Digital title) display button ···· In the camera mode

Press this button to display or erase the title of a selected page.

▶◀ (pause / still) button ···· In the play mode

Press this button to pause playback and reproduce a still picture.

⑰ Reshoot button ···· In the camera mode

When the recording is paused, press this button to rewind the tape to the beginning of the shot scene and stop recording.

Blank search button ···· In the play mode

Press this button to detect a recording end position through high-speed search playback (at 15 times the ordinary speed) and then reproduce a still picture.

⑱ Power zoom buttons

Press the W button to set a wide picture angle. Press the T button to set a telescopic picture angle.

⑲ Play mode indicator

A green color is lit when in the play mode. Flashes in the event of a voltage drop, dewing, or error detection.

⑳ Camera mode indicator

A red color is lit when in the camera mode. Flashes in the event of a voltage drop, dewing, or error detection.

㉑ Mode selection button

Press this button to switch between the camera mode (when the camera mode indicator is lit in red) and the play mode (when the play mode indicator is lit in green).

㉒㉕ Start / stop button

Camera mode: Press this button to start or pause shooting.

Play mode: Press this button to pause playback and reproduce a still picture.

㉓ Power button

Press this button to turn the power on or off.

㉔ Battery ejection switch

Use this switch to remove the battery pack from the battery mounting section.

㉖ Unlocking switch

Use this switch to open the cassette holder cover.

㉗ Cassette ejection button

Press this button to eject a cassette tape.

1-4. Information display on EVF

The electronic viewfinder (EVF) provides a centralized display of operational information, warning messages, and auto dates.
Information displayed on the EVF are listed below.

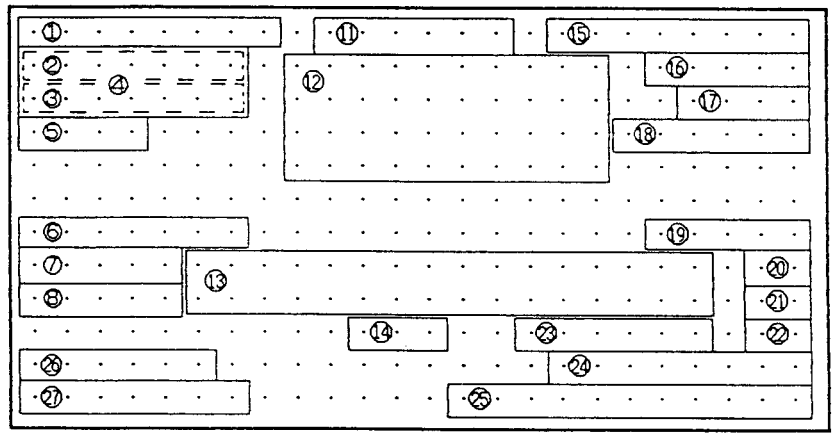


Figure I-3

① Zoom information
(camera mode)
T - - - - - W
* : Position,
> < : Direction
Bilingual (play mode)
(No display) : Stereo
MAIN : Main voice
SUB : Sub voice
MAIN+SUB : Main voice+ sub-voice

② White balance
(No display) : FAWB
WBSET : White balance set(Flashes when adjustment is being made or impossible.)

③ Shutter speed
1/120th of a second
1/250th of a second
1/500th of a second
1/1000th of a second
1/2000th of a second
1/4000th of a second
1/10000th of a second

④ Program AE
AUTO : Full auto mode
(No display) : Manual mode
SPORTS : Sports mode
PORTRAIT : Portrait mode
LANDSCAPE : Landscape mode
SPOTLIGHT : Spotlight mode
SAND & SNOW : Sand & snow mode

⑤ Exposure adjustment
+ : Over, - : Under
Number : 0.5 per stage
(No display) : Standard
"LINE IN" is displayed when any line is input.

⑥ Digital title (camera mode)
T1 : 1-page title
T2 : 2-page title
+ : Superimposed display
· : Alternate display
S : Scrolled display
W : Wiped display
↑, ↓, ←, → : Direction of display
Edit (play mode)
EDIT : Edit mode

⑦ 1-page title color
WHT : White
BLU : Blue
GRN : Green
SKY : Sky blue
RED : Red
VIO : Violet
YEL : Yellow
BLK : Black
<··>: See-through display

⑧ 2-page title color
(Same as (7) above.)

⑪ Timer mode
SELF : Self-timer
SELF 30 : Self-timer for 30 seconds
(10) SEC : Countdown toward start of recording (second)
(30) SEC : Countdown toward end of recording (second) (when SELF 30 is displayed)
(0) SEC : Recording time (0 to 10 seconds)

⑫ Menu screen
MENU 1 Menu 1 screen
→ GAIN UP : Gain increase
SELF : Self-timer
FADE-T : Fade trigger

MENU 2 Menu 2 screen
DT TINT : See-through display of digital titles
DT S/W : Scrolled / wiped display

MENU 3 Menu 3 screen
→ MIC : Microphone with variable directional angles
W. SCREEN : Automatic wind sound screening

MENU 4 Menu 4 screen
→ SP/LP : SP/LP Selection
TALLY : Tally lamp on/off
SENSOR : Remote sensor on/off

MENU (play mode)
→ BILINGUAL : Bilingual mode
EDIT : Edit switch on/off
SENSOR : Remote sensor on/off

⑬ Character title
16 characters x 2 lines
Alphabetical characters (A - Z), numerical characters (0 - 9), and symbols (, . / - ' " : ; ? ! * & Ä Ö Ü Ø Å Æ Ñ Ç Ë)

⑭ Warning against dewing
DEW : Dewing

⑮ Tape counter
(Hour) : (Minute) : Second

⑯ Tape state
TAPE : No tape loaded or broken click of tape cassette (Flashes)
T. END : End of tape

⑰ Warning against voltage drop
BATT : Battery pack voltage drop (Flashes)

⑱-㉒ Setting of various functions
FADE-T : Fade trigger ("T" flashes during standby.)
GAIN ↑ : Gain increase
T ↓ : Tally lamp off
S ↓ : Remote sensor off
W ↓ : Automatic wind sound screening

㉓ Directional angle of microphone
(No display) : Standard
NARROW : Narrow
WIDE : Wide
Zoom : Varying in linkage with zooming

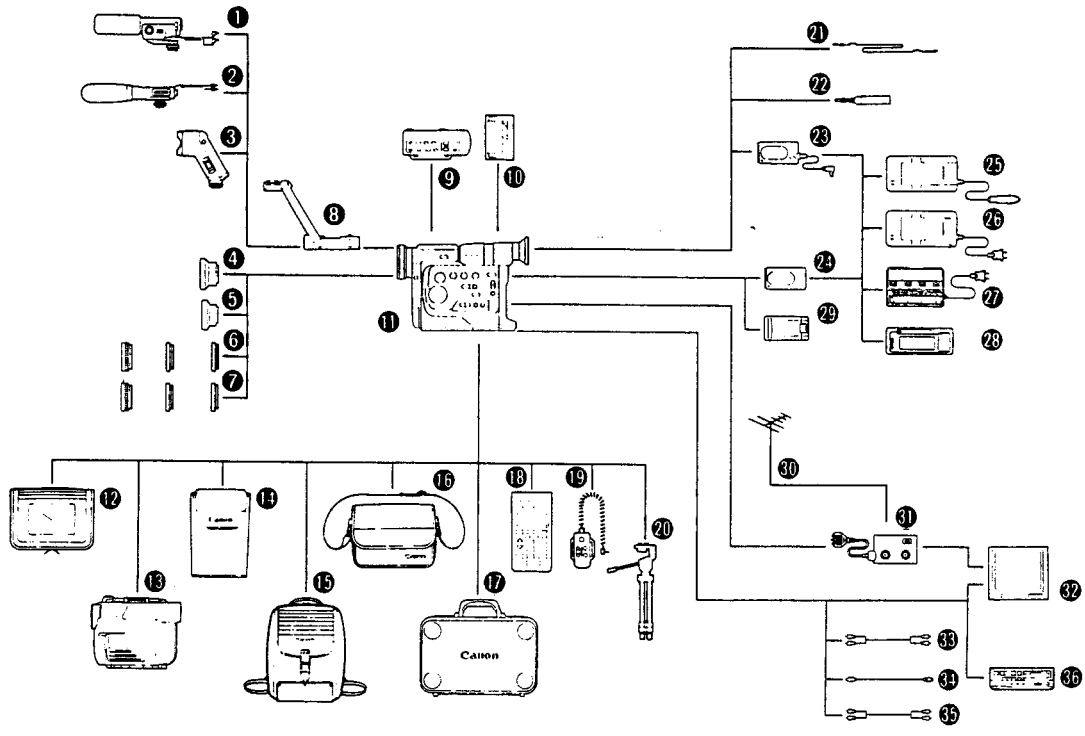
㉔ Time
(Hour) : (Minute)

㉕ Date
(Day). (Month). (Year)

㉖ Hi8 recording
Hi8 : Recording with Hi8 (UC1HiE only)
Tape speed
SP : SP mode
LP : LP mode

㉗ VTR mode
REC : Recording
(No display) : Normal reverse recording search
PLAY : Playback, fast forwarding, rewinding playback, or normal reverse high-speed search
STOP : Tape stop
STILL : Still playback
FF : Fast forwarding
REW : Rewinding
PAUSE : Recording pause
EJECT : Tape ejection (Flashes when an error occurs.)
* : Ready for reshooting

1-5. UC1HiE/UC20E System



❶ ZM-100 Stereo/Zoom Microphone
❷ MM-200 Stereo Mixing Microphone
❸ VL-20 Battery Video Light
❹ WD-37 Wide-converter
❺ TL-37 Tele-converter
❻ FS-37U Filter Set
❼ FS-37 Filter Set
❽ SA-1 Adapter Bracket
❾ WL-1 Wireless Controller
❿ 8mm Videocassette
⓫ UC1HIE/UC20E
⓬ RS-U1 Rain Shield
⓭ SK-U1 Sports Pack
⓮ SJ-U1 Soft Video Jacket
⓯ VK-U1 Video Backpack
⓰ SC-U1 Soft Carrying Case
⓱ HC-U1 System Case
⓲ ED-100 Video Editor
⓳ ZR-100 Zoom Remote Controller
⓴ Tripod
㉑ SS-200 Shoulder Strap
㉒ WS-20 Wrist Strap
㉓ DC-100 DC Coupler
㉔ BP-E77K/BP-E722 Battery Pack
㉕ CB-110 Car Battery Adapter
㉖ CA-100 Compact Power Adapter
㉗ MC-100 Multi-battery Charger
㉘ PB-100 Portable Battery Charger
㉙ BT-U1 Battery Case
㉚ VHF Antenna
㉛ RU-100 RF Unit
㉜ TV
㉝ C-150 AV Cable
㉞ S-150 S-video Cable
㉟ ST-150 Stereo Cable
㊱ VCR

Figure I-4

2. New Technologies

2-1. Lens section

2-1-1. Inner focus zoom lens

The lens system mounted in the UC1HiE/UC20E is designed to ensure its small size and light weight by incorporating the following features:

· Inner focus system·Non-spherical lens·Design dedicated to an image pick-up element for 1/3 inch CCD

The inner focus system can be used to shorten a shooting distance. On the other hand, it requires control by an electronic cam (a microcomputer, stepping motor for driving the relay system, and zoom encoder) because control over the relay system is complicated.

A single non-spherical lens replaces the conventional three spherical lenses to serve as a Group 3 constructive lens, thus realizing high performance with a 10 x zoom ratio, excellent picture quality, and small lens size.

The design dedicated to an image pick-up element for 1/3 inch CCD ensures a smaller lens size by 20 to 30 percent than that for 1/2 inch CCD with the same specification of a 10 x zoom ratio and the inner focus system.

[Mechanical and optical systems]

Figure I-5 shows the optical system of the 10 x inner focus zoom lens for the UC1HiE/UC20E. In this optical system, a front ball does not move (forward about 15 mm at an telescopic end) along with zooming unlike the optical system of the inner focus lens for Model E6 camcorder.

The Group 1 lens is fixed together with a single non-spherical lens serving as a Group 3 constructive lens. This lens system reduces spherical aberration and saves necessary lenses, thus ensuring excellent picture quality and small lens size.

The Group 2 variator lens is moved linearly by a ball screw, which has a gear pressed into it and is connected to a PZ motor. The ball screw engages a ball, which is accommodated in a variator (V) carrying ring and pushed up by a flat spring. Thus, the V carrying ring will move via the ball when the ball screw is rotated by the PZ motor.

The Group 4 compensator lens functions as a focusing lens and forms different orbits depending on its distance to a subject during zooming, as detailed in the section on the electronic cam. A rack engages a screw part of stepping motor and is pressed against it by a rack spring. The rack is then accommodated in an RR carrying ring to smoothen by the rack spring. Thus, the rack will move linearly together with the RR carrying ring when the stepping motor operates.

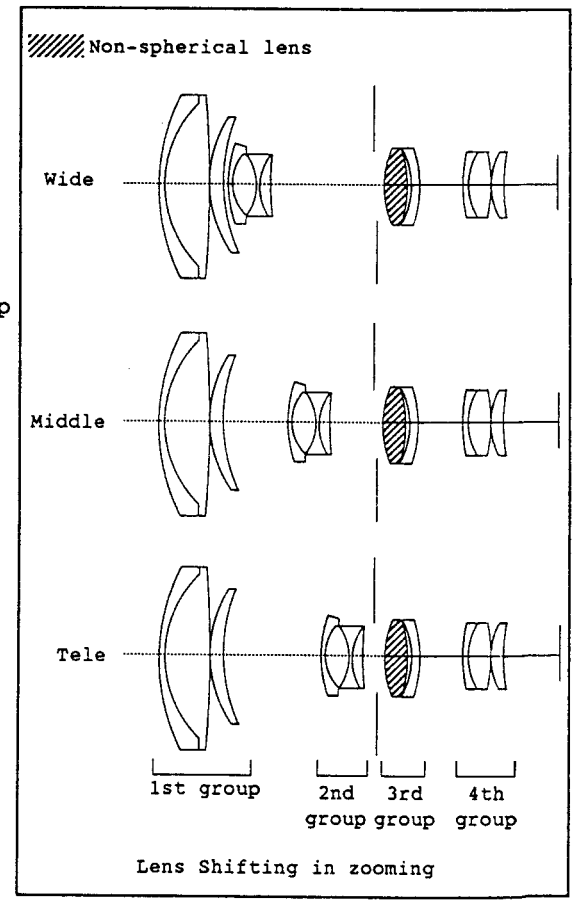


Figure I-5

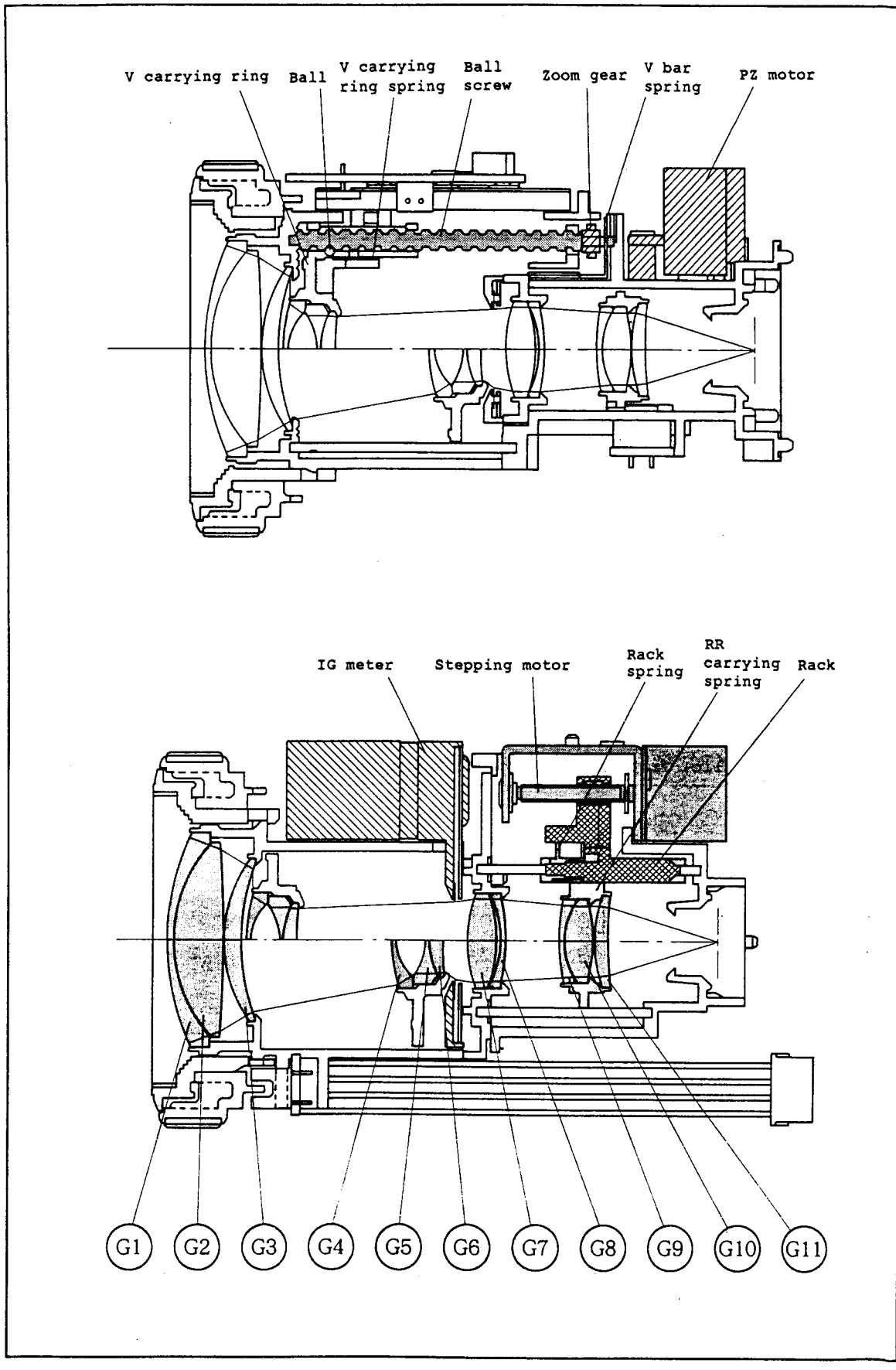

V carrying ring
Ball
V carrying ring spring
Ball screw
Zoom gear
V bar spring
PZ motor
IG meter
Stepping motor
Rack spring
RR carrying spring
Rack
G1
G2
G3
G4
G5
G6
G7
G8
G9
G10
G11

Figure I-6

2-1-2 Manual focus ring

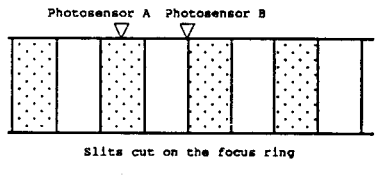
In an inner focus lens system, a focus lens is housed in a lens barrel and therefore cannot be moved by rotating a helicoid externally unlike a front ball focus lens system. In the conventional inner focus lens system, the focus lens used to be driven when on-off operation of an external FAR / NEAR switch is detected by a microcomputer.

To solve the above problems, the inner focus lens system uses a manual focus ring (electronic) to allow focusing in the same manner as the front focus lens system and the sophisticate design of the lens section.

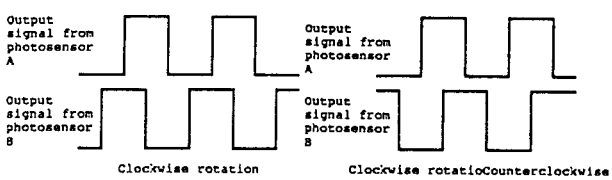
[Operational description]

Two photosensors A and B are provided relative to 53 slits cut on the periphery of a focus ring. The photosensors will detect the rotation of the focus ring when light passes through the slits. Figure I-7 shows the relative positions of the photosensors and slits.

The phase difference between the photosensors and slits is 90o, so that output signals from the photosensors vary relative to the rotational direction of the focus ring as shown in Figure I-7. The phase difference between output signals from the photosensors A and B is 180° relative to the rotational direction of the focus ring. Thus, the combinations of different phases of the output signals can be used to detect the rotational direction of the focus ring as shown in Table I-7. To accurately detect the rotational direction of the focus ring, the microcomputer examines both the rising and falling edges of the output signal from the photosensor A. If the output signal from the photosensor A or B remains constant for a certain period, the microcomputer assumes that the focus ring has stopped. If the focus ring is rotated too fast, the focus ring is given a certain degree of mechanical (hydraulic) friction for accurate detection of rotaitonal direction.



a. Relative Positions of Photosensors and Slits



b. Timing of Output Signals from Photosensors

Output signal from photosensor A	Output signal from photosensor B	Detected rotational direction
Rising edge Falling edge	HIGH LOW	Clockwise rotation
Rising edge Falling edge	LOW HIGH	Counterclockwise rotation

c. Output Signals from Photosensors and Detected Rotational Direction of Focus Ring

Figure I-7

2-2. Camera section

2-2-1. AE system

The conventional automatic exposure (AE) control system provides the following two types of independent control in a servo loop:

- Control of S/H output to hold it at a constant level (iris control)
- Control of gain to hold it at a constant level (automatic gain control (AGC))

The AE control system adopted in the UCS1A also provides the above two types of independent control in a servo loop but differs from the conventional one in that a microcomputer fetches a desired S/H output or gain level and provides integrated programmed control of exposure, shutter speed, and gain according to various conditions such as illumination. It is not that these three parameters are controlled separately but that any one of them is controlled in a certain illumination area. In other words, they are not controlled simultaneously.

This model uses a 24-division (4 x 6) photometric pattern shown in the Figure I-8.

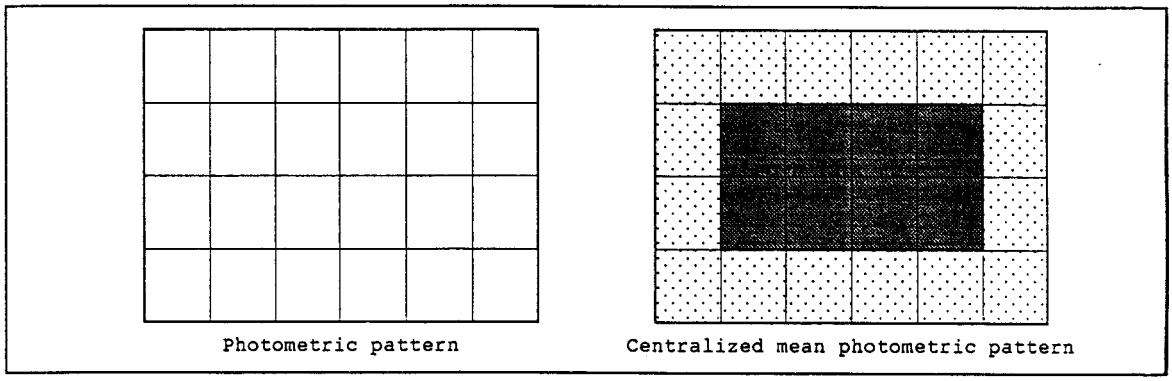


Figure I-8

1) Manual mode

Photometric system: Center-weighted average photometering.

Exposure: Automatically controlled by the iris.

- Exposure can be increased in four stages and decreased in three stages (in the same manner as Model E08).

Shutter speed: Manually set.

- Any exposure and shutter speed last set in the manual mode will be maintained until they are reset.

<Operation>

On the whole, the camera section operates in the manual mode in the same manner as in the full auto mode.

In the manual mode, exposure can be adjusted while any desired shutter speed can be set. Note, however, that the automatic exposure (AE) control works constantly in the manual mode, making the camera section operate differently from a still camera.

In the manual mode, the iris itself cannot be set while exposure will be optimized through iris control when shutter speed is set (adjusted to shutter speed).

Only in the manual mode, gain can be increased to a maximum of + 6 dB (by approximately 2 times) and a gain control range will also be increased from 0 - 7.5 dB to 0 - 13.5 dB.

(The gain control range increase means not that gain controllable range shifts toward + side.)

<Effect>

The manual mode allows adjustment of exposure and setting of any desired shutter speed.

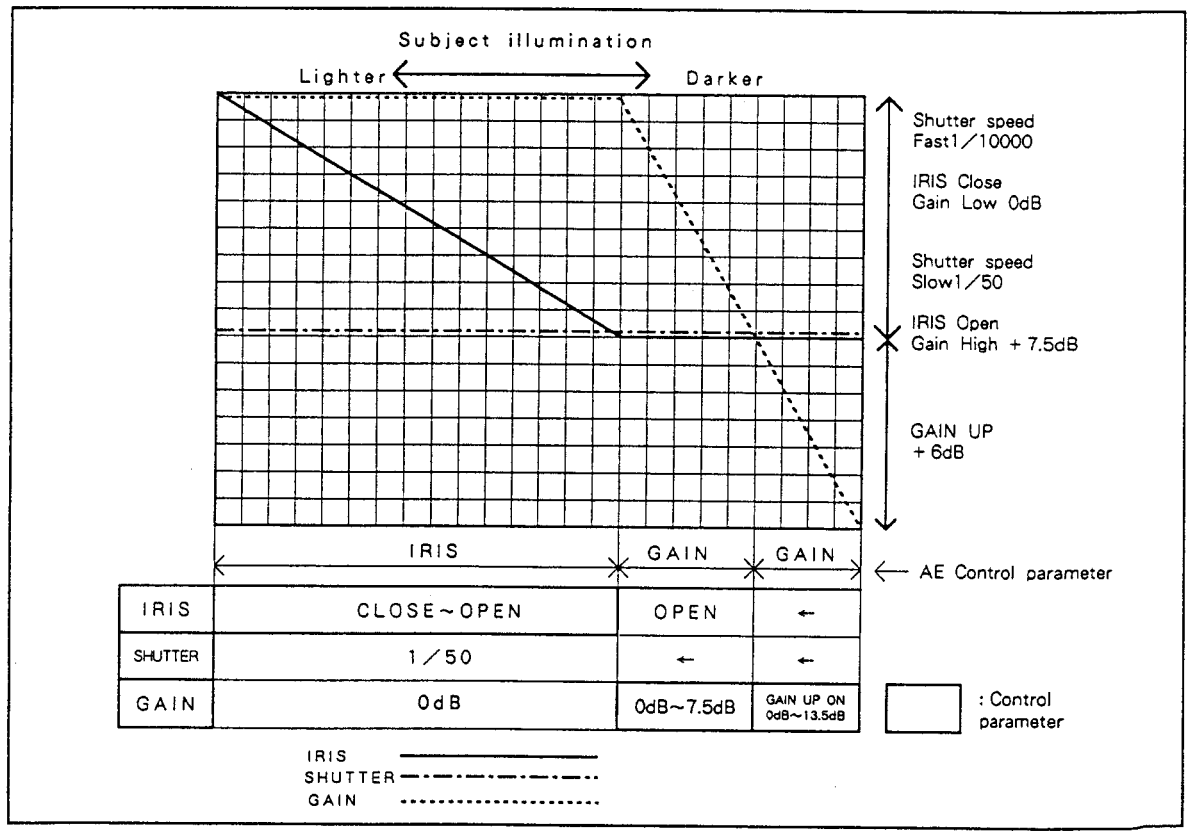


Figure I-9 Conceptual Chart of AE Control in Manual Mode

2) Full auto mode

Photometric system: Center-weighted average photometering.

Exposure: OPEN - CLOSE [Fixed to F16 (under consideration) in some areas.].

Shutter speed: Automatically set to 1/60th, 1/60th to 1/250th, and 1/60th to 1/50th of a second basically.

<Operation>

In the full auto mode, basic shutter speed of 1/60th of a second is set to prevent flickering under the influence of a fluorescent lamp. With this basic shutter speed, gain and exposure are regulated to 0 dB and OPEN - F16 respectively in a high illumination area and to 0 - 6 dB and OPEN respectively in a low illumination area. In those illumination areas where exposure is inadequate with shutter speed of 1/60th of a second, exposure of OPEN, and gain of 6 dB, gain is fixed at 6 dB while shutter speed is regulated to 1/60th - 1/50th of a second. In those illumination areas where exposure is inadequate with shutter speed of 1/50th of a second, gain is regulated to 6 - 18 dB.

In those illumination areas where exposure is excessive with shutter speed of 1/60th of a second and exposure of F16, shutter speed is regulated to 1/60th - 1/250th of a second. In those illumination areas where exposure is excessive with shutter speed of 1/250th of a second, exposure is regulated to F16 - CLOSE.

<Effect>

The full auto mode prevents flickering under the influence of a fluorescent lamp and reduction of resolution due to diffraction with small exposure during shooting with high illumination.

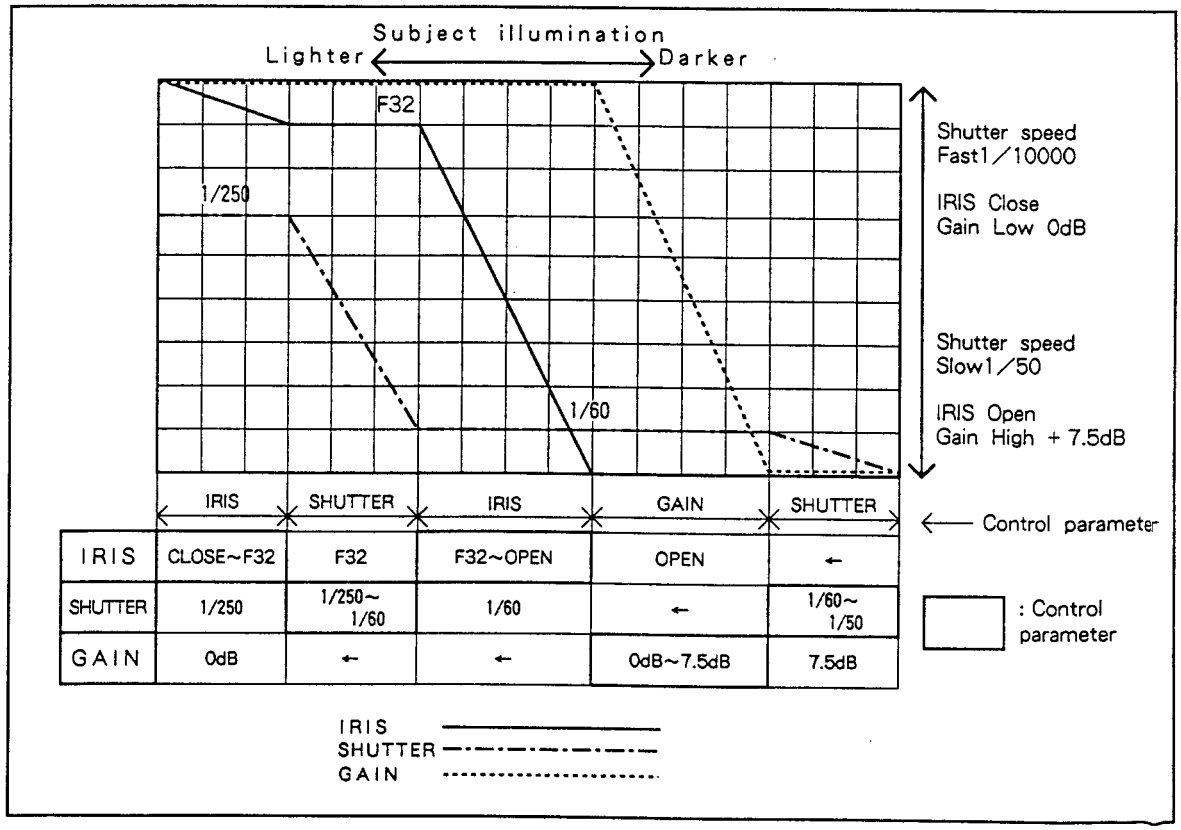


Figure I-10 Conceptual Chart of AE Control in Full Auto Mode

3) Sports mode

Photometric system: Center-weighted average photometering.

Exposure: Automatically controlled by the iris.

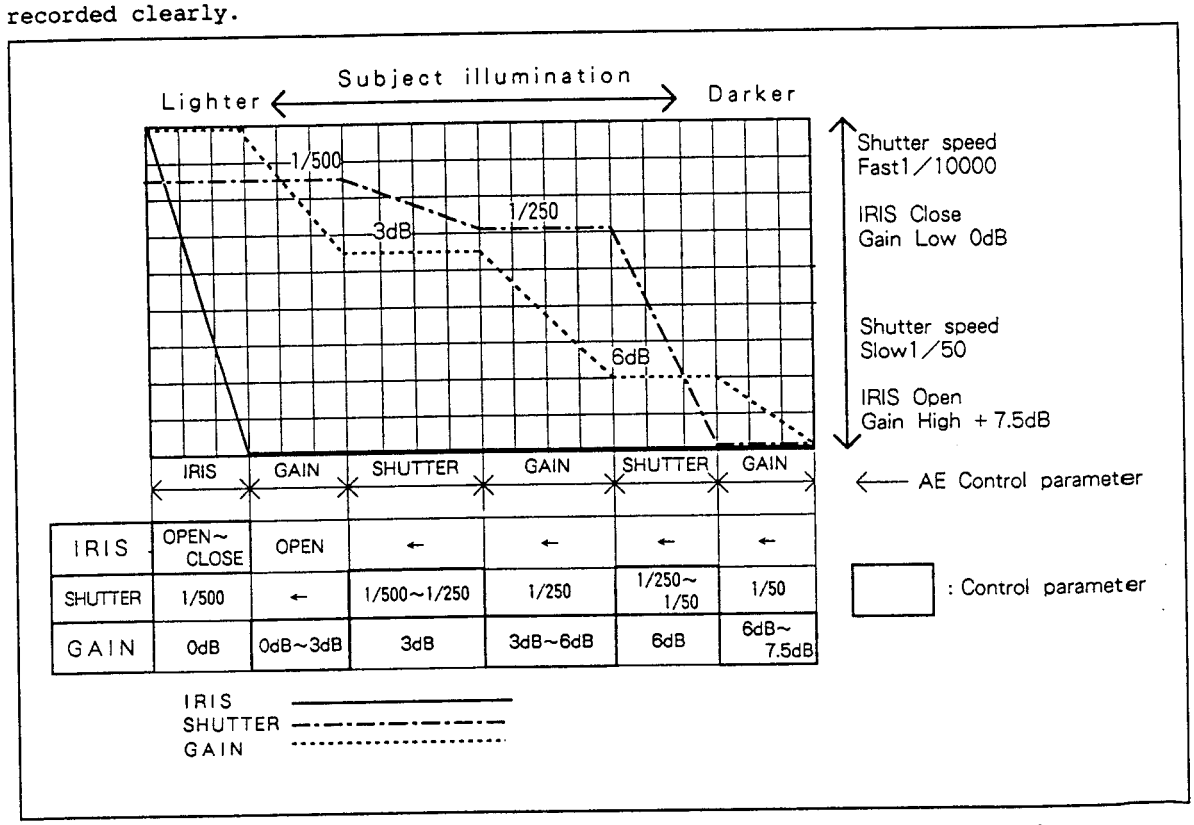
Shutter speed: Automatically set to any value ranging from 1/500th to 1/250th and to 1/50th of a second.

<Operation>

In the sports mode, exposure is basically set close to OPEN to set as high a shutter speed as possible (up to 1/500). If shooting is made under fine weather wnditions, gain, shutter speed, and exposure are normally regulated to 0 dB, 1/500th of a second, and OPEN - CLOSE respectively. Otherwise, the following five different combinations of shutter speed and gain are set in five different stages: [1/500, 0 - 3 dB], [1/500 - 1/250, 3 dB], [1/250 3 - 6 dB], [1/250 - 1/50, 6 dB], and [1/50, 6 - 7.5 dB].

<Effect>

In the sports mode, automatic exposure (AE) control is programmed to set as high a shutter speed as possible (up to 1/500th of a second). Consequently, dynamic resolution improves with standard shutter speed, thus fast motion subject can be recorded clearly.



IRIS	OPEN~CLOSE	OPEN	←	←	←	←
SHUTTER	1/500	←	1/500~1/250	1/250	1/250~1/50	1/50
GAIN	0dB	0dB~3dB	3dB	3dB~6dB	6dB	6dB~7.5dB

Figure I-11 Conceptual Chart of AE Control System in Sports Mode

4) Portrait mode

Photometric system: Center-weighted average photometering.

Exposure: Basically OPEN (Automatically controlled with the iris when shutter speed is set to 1/1300th of a second).

Shutter speed: 1/1300th - 1/50th of a second.

<Operation>

In the portrait mode, the iris is basically left open. Exposure is controlled with the shutter if it is not reasonable with shutter speed of 1/1300th - 1/50th, and with the iris if it is excessive with a shutter speed of 1/1300th. Gain is automatically regulated to 0 - 7.5 dB to control exposure if it is inadequate with a shutter speed of 1/60th of a second.

<Effect>

In the portrait mode, the iris is left as open as possible (or nearly open) to hold a background in low relief and consequently a subject in high relief.

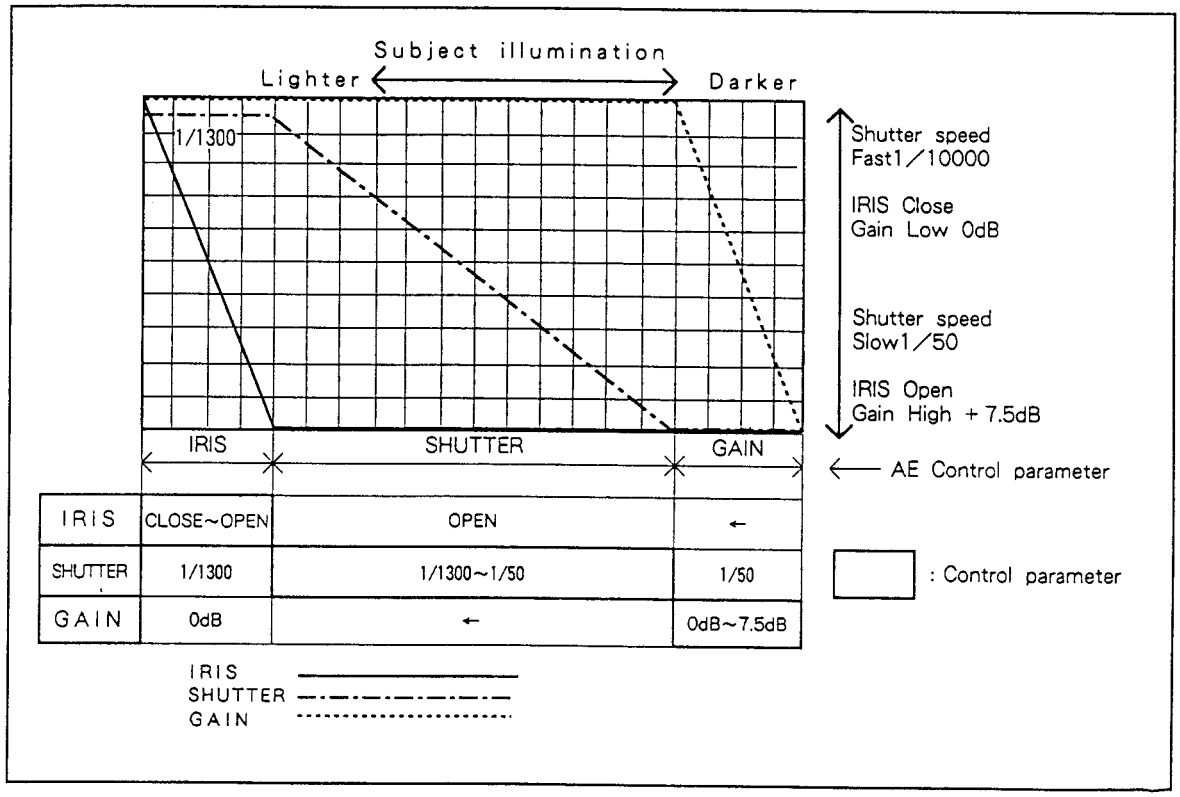


Figure I-12 Conceptual Chart of AE Control in Portrait Mode

5) Landscape mode

Photometric system: Cutting (masking) the upper half of the screen divided into 24 sections.

Exposure: Same as in the spotlight mode.

Shutter speed: Same as in the spotlight mode.

<Effect>

In the landscape mode, the intensity of light in only the lower half of landscape is measured to prevent its blackening under a bright sky (with cloud, backlight, etc.), thereby optimizing its exposure.

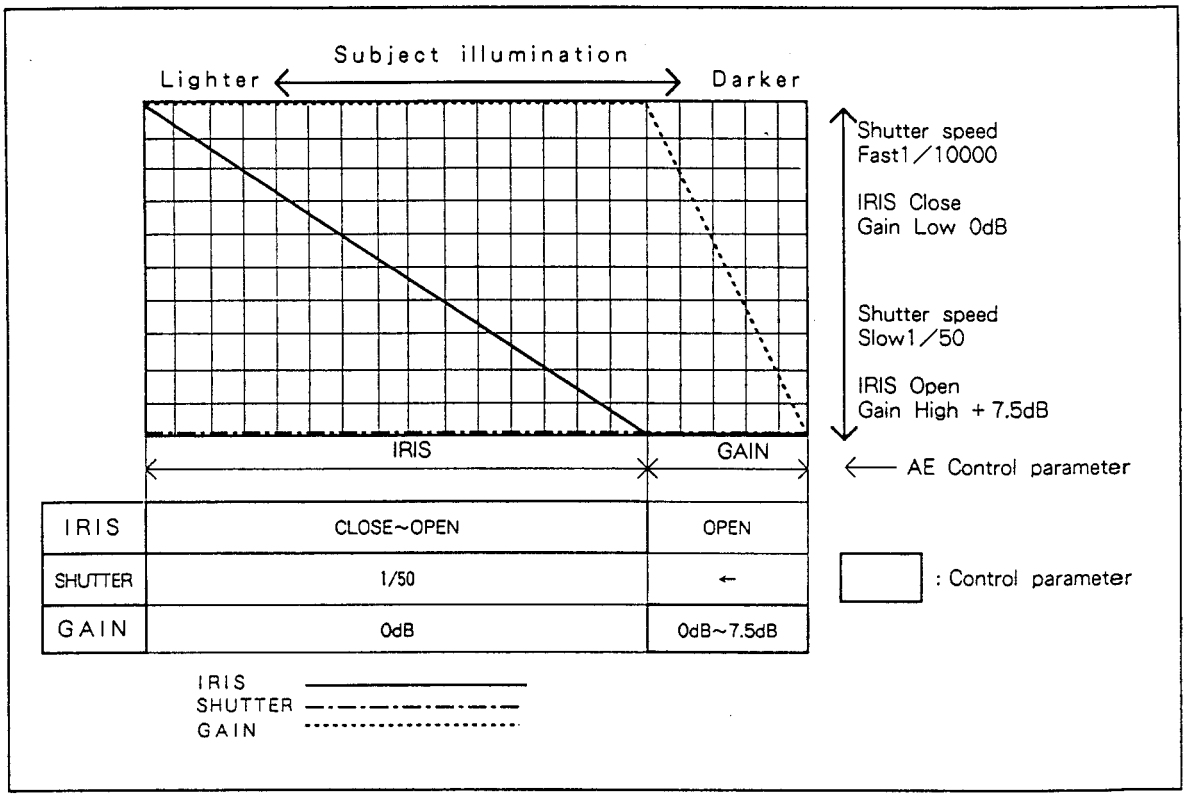


Figure I-13 Conceptual Chart of AE Control in Landscape Mode

6) Spotlight mode

Photometric system: Mean of the two highest signal level areas of 24 (4 x 6) areas constituting the screen.

Exposure: Automatically controlled by the iris.

Shutter speed: Fixed at 1/50 (Cannot be changed).

<Operation>

Shutter speed is fixed at 1/50, gain at 0dB, and AE controlled by the iris only. The photometric pattern is not center-weighted average photometry, rather the screen is divided into 24 areas, six laterally and four vertically, and controlled so that the area at the highest level of area signal becomes the appropriate level.

<Effect>

With the conventional center-weighted average photometry, a highlight with a small contrast ratio and a relatively small area tends to be exposed excessively and consequently reproduced as a blank. In the spotlight mode, however, exposure of the highlight is optimized, thus preventing it from being reproduced as a blank.

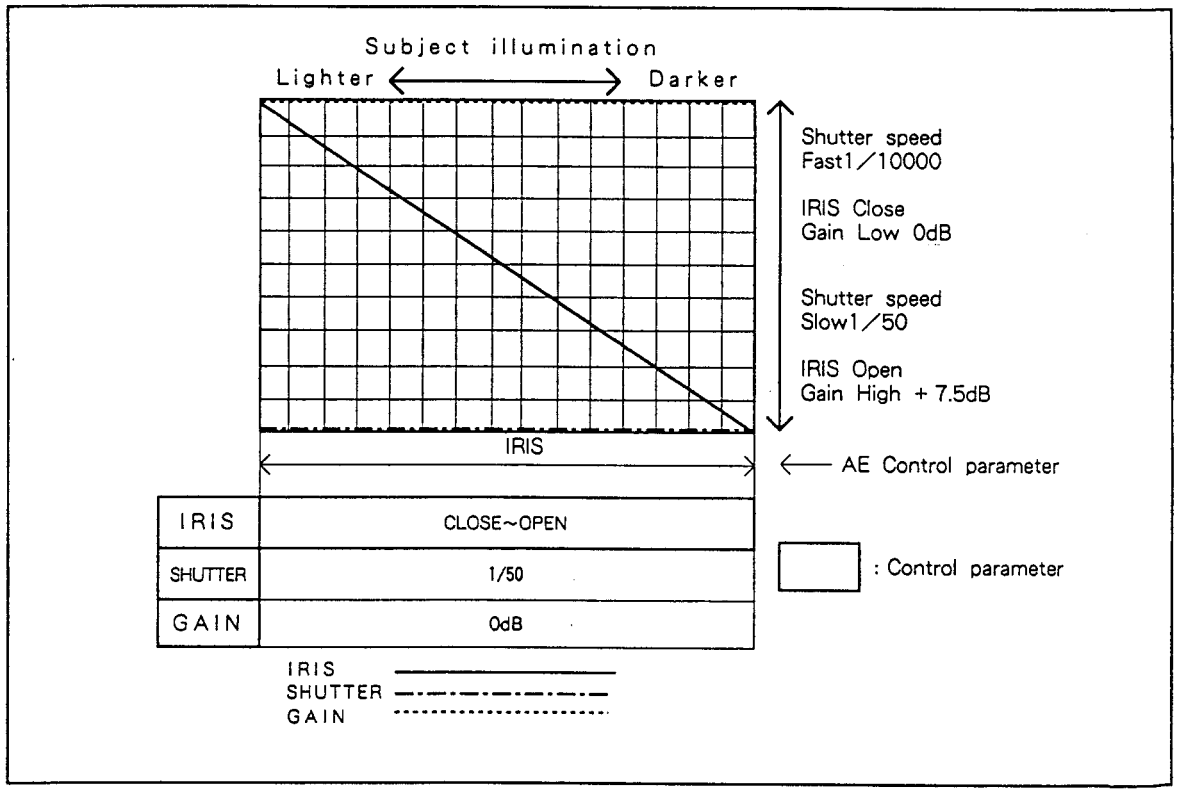


Figure I-14 Conceptual Chart of AE Control in Spotlight Mode

7) Sand & snow mode

Photometric system: Mean of the twelve highest signal level areas of 24 (4 x 6) areas constituting the screen in the same manner as in the spotlight mode. Setting gain greater than its ordinary value by 5 to 6 dB (about twice its ordinary value).

Exposure: Automatically controlled by the iris (only when the shutter speed is set to 1/250).

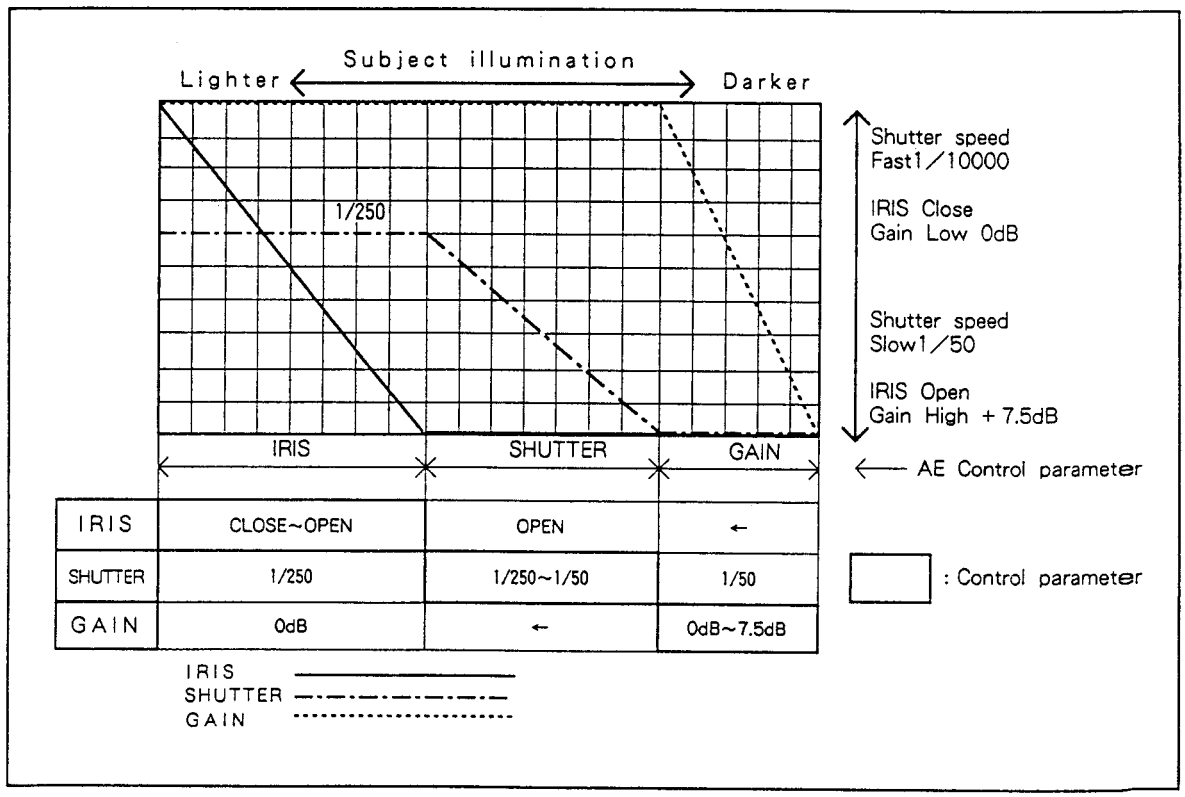
Shutter speed: Automatically switched between 1/250 and 1/250 to 1/50.

<Operation>

In the sand & snow mode, exposure is controlled through automatic iris control with the shutter speed set to 1/250 at high brightness, by varying the shutter speed between 1/250 and 1/50 with sufficiently high brightness for the opening of the iris, and through automatic gain control (AGC) at a still higher brightness.

<Effect>

A photometric pattern used in the sand & snow mode is similar to that used in the spotlight mode except that gain is set to about twice its ordinary value, thus taking a bright picture of snow (preventing it from being reproduced as a blank). In the sand & snow mode, a picture of humans and clothes becomes brighter than in any other mode. To prevent reduction of resolution, the iris can also be left too open by setting a slightly high shutter speed (1/250).



IRIS	CLOSE~OPEN	OPEN	←
SHUTTER	1/250	1/250~1/50	1/50
GAIN	0dB	←	0dB~7.5dB

Figure I-15 Conceptual Chart of AE Control in Sand & Snow Mode

2-3. Recorder section

2-3-1. Jitter reduction circuit

The recorder section incorporates a jitter reduction circuit which controls the speed and phase of the drum by using FG and PG signals in a servo loop and controls its rotation by using a horizontal synchronizing signal derived from a PB video signal.

The jitter reduction circuit works on the condition that the frequency of the horizontal synchronizing signal is kept constant.

The jitter reduction circuit serves to reduce jitters resulting from the expansion or contraction of a video tape or from playback of pictures accompanied by jitters when recorded on a video tape.

Note that the jitter reduction circuit has an adverse effect if it works when the frequency of the horizontal synchronizing signal is unstable or displaced to a certain extent. To avoid this, the recorder section also incorporates a mechanism for disabling the jitter reduction circuit.

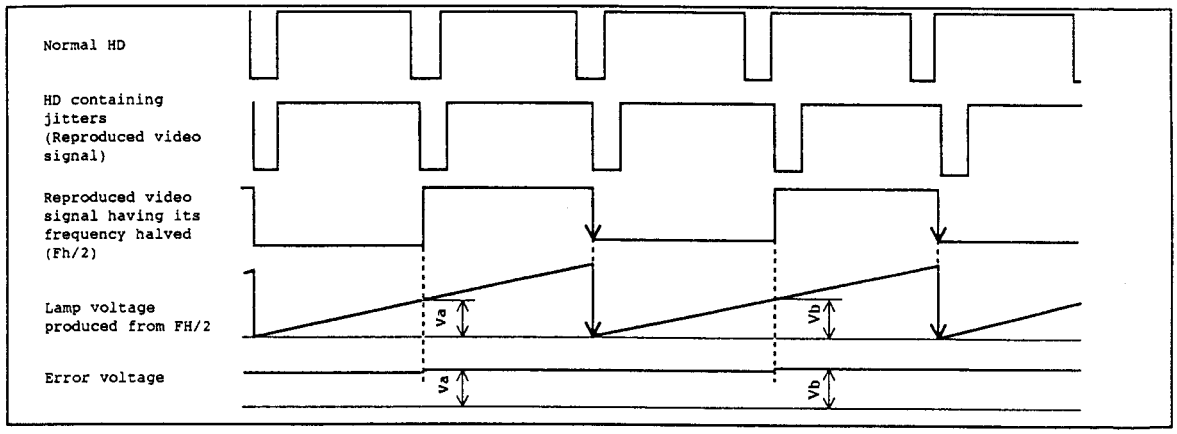


Figure I-16

Figure I-16 shows the timing of detection of jitters from a horizontal synchronizing signal.

A horizontal synchronizing signal derived from a PB video signal has its frequency halved (FH/2) to produce a saw-tooth pulse, which, in turn, is sampled and held as it rises to produce an error voltage.

If the frequency of HD is kept constant, it follows that the resulting error voltage is also kept unchanged.

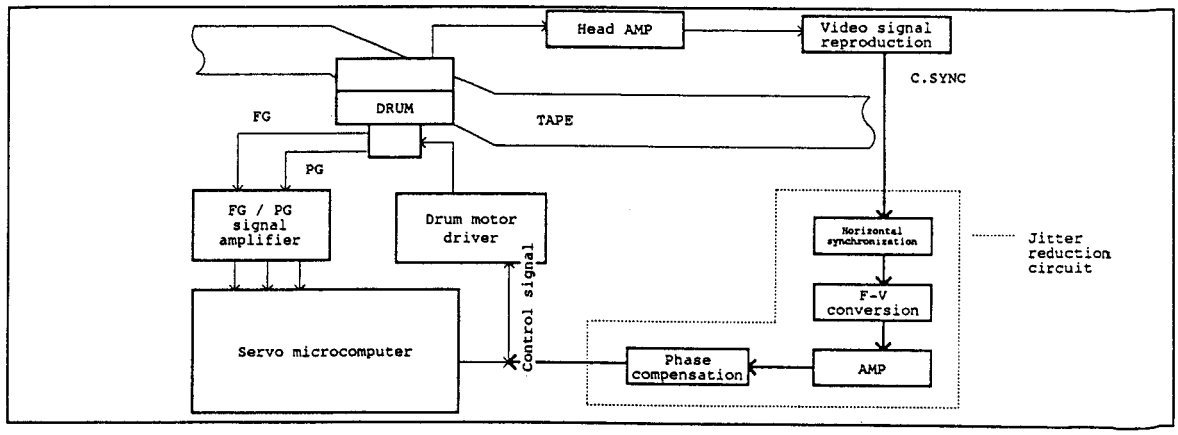


Figure I-17

In Figure I-17, the section enclosed in dotted lines forms the jitter reduction circuit.

2-3-2. Stereo Microphone with Directional Angles and in Linkage with Zooming

The UC1HiE/UC20E provides a stereo microphone with directional angles variable in three stages (NARROW, WIDE, and NORMAL) and in linkage with zooming (ZOOM) as shown in the table below.

MODE	Example of application
NARROW	Shooting an entire baseball stadium within a wide directional angle and the battery's catch within a narrow directional angle by varying the directional angle in many stages in linkage with zooming.
WIDE	Shooting an entire baseball stadium with a large audience people by recording their voices within a wide directional angle.
ZOOM	The microphone linked to the zoom means that the directional angle changes between wide and narrow as sound is recorded.
NORMAL	Directional angle of 120°.

2-3-3. Bilingual playback circuit

Camcorder Model UCS1A/UC20A incorporates a bilingual playback circuit for reproducing bilingual sound recorded on tape. Note that the bilingual playback circuit cannot be used to record bilingual sound.

Bilingual sound and stereo sound can be recorded within the following bands:

Bilingual sound	Main audio	1.5 MHz
	Sub audio	1.7 MHz
Stereo sound (Recording)	L + R	1.5 MHz
	L - R	1.7 MHz

Stereo sound is reproduced by using the following matrixes:

(L + R) + (L - R) = 2L

(L + R) - (L - R) = 2R

Bilingual playback using the same matrix results in mixture of outputs of the main and sub-audio from L and R channels. To avoid this, this model provides a special menu below that allows bilingual playback without using the matrixes.

MENU	MAIN+SUB	MAIN	SUB
Lch	Main audio	Main audio	Sub-audio
Rch	Sub-audio	Main audio	Sub-audio

3. Outline of Circuit Operation

3-1. Camera Circuit

3-1-1. Power Circuit

The power to the camera and recorder is supplied by the power circuit printed on PM P.C.B.

- CAMERA 5 V(+ 15 V, and -8.5 V), signals are fed from PM P.C.B. via RECORDER - MAIN P.C.B.
- The signal output from Pin 3 of IC 1404 is set to "L" level at rise time and fall time of CAMERA 5 V signal, resetting the other ICs.
- When AF is unnecessary, the signal output from Pin 42 of IC1403 shuts off and thus saves the power to the camera and recorder.

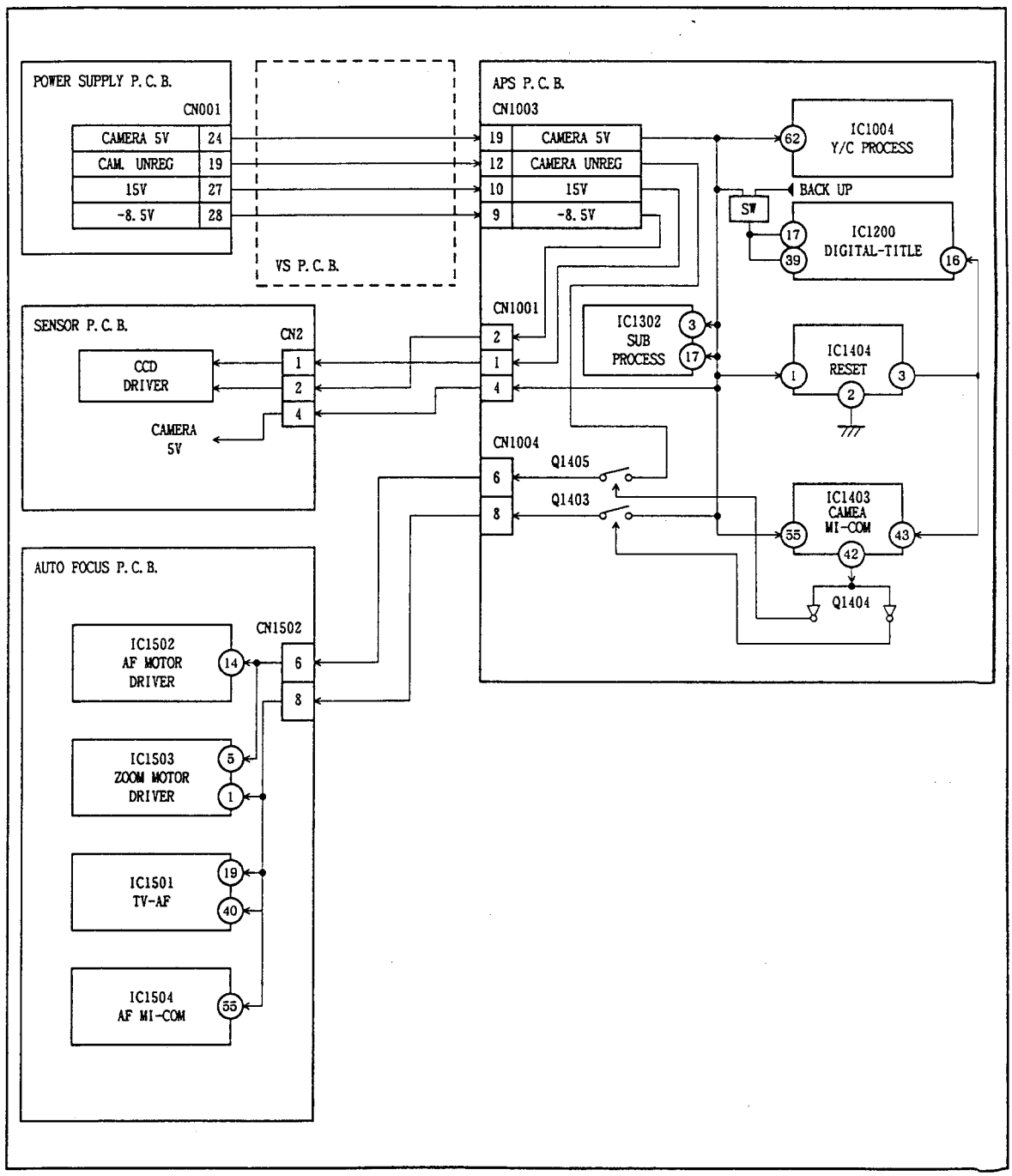


Figure I-18

3-1-2. Programmed AE Circuit

Model UC1HiE/UC20E provides the programmed AE mode as a new AE mode. The diagram of the programmed AE circuit is shown below.

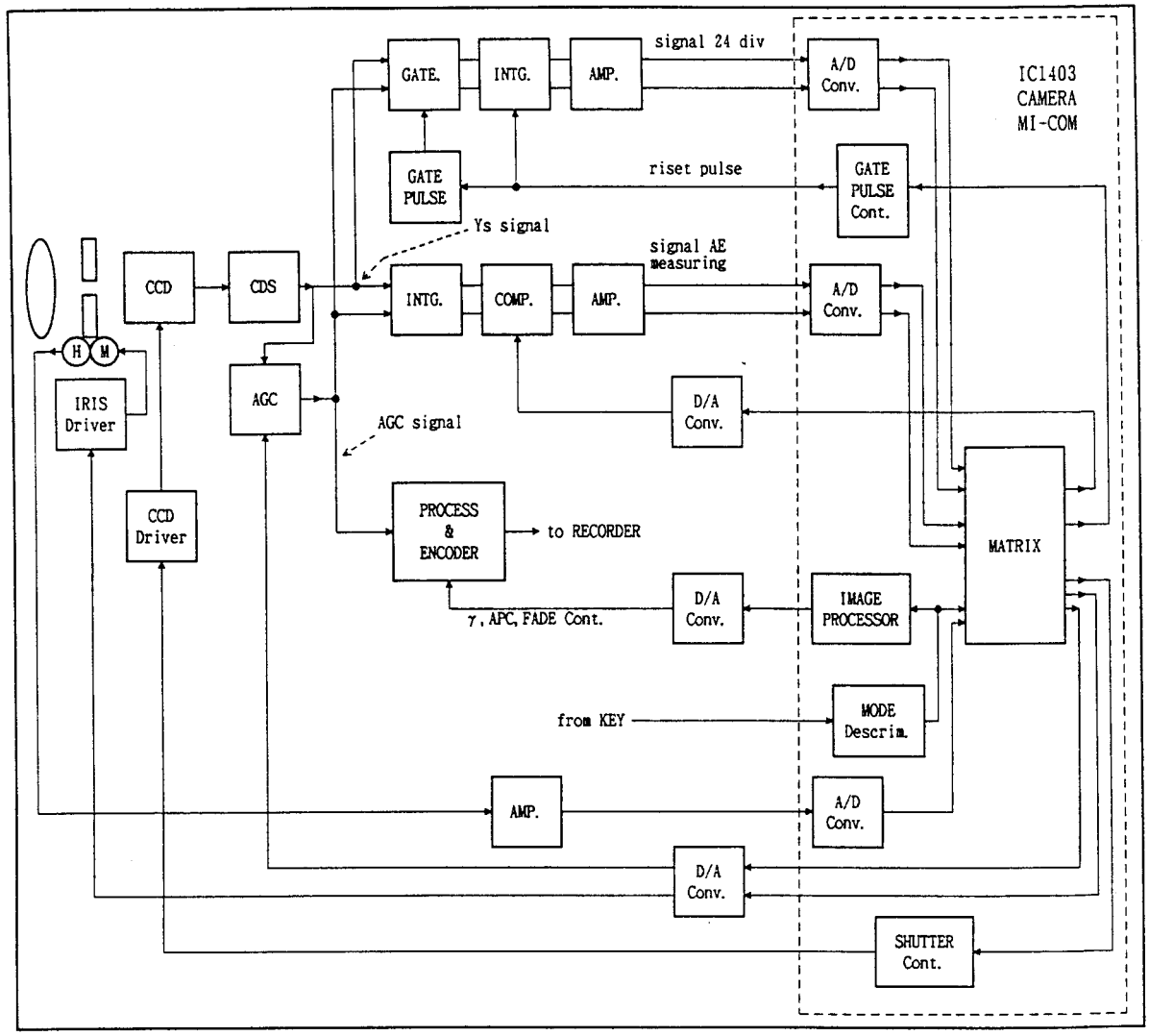


Figure I-19

(The individual AE modes are described in the sections on new technologies.)

There are three AE control parameters: iris control, electronic shutter control, and automatic gain control (AGC).
These three parameters work not simultaneously but separately at different priorities in different AE modes.
The 24-division signal and the centralized AE photometric signal are read and then processed in the manner specific to the current AE mode. One of the three control parameters work at the priority also specific to the current AE mode.

Model UC1HiE/UC20E's built-in microcomputer is similar to that of Model UC10E except that the gate pulse generation circuit is provided externally.
The gate pulse output from IC 1400 reduces the load on the Model UC1HiE/UC20E's built-in microcomputer, thus enabling one AE control at every one volt.

3-1-3. Pins of D/A Converter 1 (IC 1003)

Pin No.	Signal name	I/O	Description
1	Vss	I	Connected to ground.
2	C LEVEL	O	C level adjustment.
3	R GAIN	O	R gain adjustment.
4	R-Y GAIN	O	R-Y gain adjustment.
5	B-Y GAIN	O	B-Y gain adjustment.
6	RG CONT	O	RG control output.
7	V SUB CONT	O	V SUB control output.
8	R-Y HUE	O	R-Y HUE adjustment.
9	B-Y HUE	O	B-Y HUE adjustment.
10	Vdd	I	Connected to CAMERA 5V
11	Vcc	I	Connected to CAMERA 5V
12	Y1 GAIN	O	Y1 gain adjustment.
13	Y2 GAIN	O	Y2 gain adjustment.
14	NC		Opened
15	DA1-STROBE	I	D/A converter 1 strobe pulse.
16	C-CLOCK	I	Clock input from CAMERA Mi-Com.
17	C-DATA	I	Data input from CAMERA Mi-Com.
18	C1 GAIN	O	C1 gain adjustment.
19	B GAIN	O	B gain adjustment.
20	GND	I	Connected to ground.

3-1-4. Pins of D/A Converter 2 (IC 1402)

Pin No.	Signal name	I/O	Description
1	Vss	I	Connected to ground.
2	C-γ CONT	O	C-γ Controls
3	WB R-CONT	O	White balance (R component) control.
4	WB B-CONT	O	White balance (B component) control.
5	SAMPLE LEVEL	O	A digital memo read threshold signal.
6	Y-γ CONT	O	Y-γ Controls
7	VAPC-GAIN	O	V APC gain adjustment.
8	CS GAIN	O	CS gain adjustment.
9	HAPC-GAIN	O	H APC gain adjustment.
10	Vdd	I	Connected to CAMERA 5V
11	Vcc	I	Connected to CAMERA 5V
12	AGC CONT	O	Automatic gain control (AGC).
13	VIDEO FADE	O	Video fade signal.
14	NC		Opened
15	DA2-STROBE	I	D/A converter 2 strobe pulse.
16	C-CLOCK	I	Clock pulse
17	C-DATA	I	Data for serial communications.
18	A-FADE	O	Audio fade signal.
19	IRIS CONT	O	Iris control.
20	GND	I	Connected to ground.

3-1-5. Pins of D/A Converter 3 (IC 1401)

Pin No.	Signal name	I/O	Description
1	Vss	I	Connected to ground.
2	I ENC GAIN	O	Iris gain adjustment.
3	I ENC OFFSET	O	Iris offset adjustment.
4	NC		Opened
5	Y LEVEL	O	Y level adjustment.
6	SETUP LEVEL	O	Setup level adjustment.
7	SYNC LEVEL	O	SYNC level adjustment.
8	B LEVEL	O	B level adjustment.
9	W-CLIP LEVEL	O	WC level adjustment.
10	Vdd	I	Connected to CAMERA 5V
11	Vcc	I	Connected to CAMERA 5V
12	BL B	O	Balances the B carrier.
13	BL R	O	Balances the R carrier.
14	NC		Opened
15	DA3 STROBE	I	D/A converter 3 strobe pulse.
16	C-CLOCK	I	Clock pulse.
17	C-DATA	I	Data for serial communications.
18	AGC SET	O	Automatic gain control (AGC).
19	IRIS SET	O	Iris adjustment.
20	GND	I	Connected to ground.

3-1-6. Pins of Built-in Microcomputer (IC 1403)

Pin No.	Signal name	I/O	Description
1	CAMERA CS Ⓛ	I	Chip select for special communications to main MI-COM(IC608)
2-4	–		Connected to ground.
5	DA1 STOROBE	O	D/A converter 1 strobe pulse. "H" in active.
6	DA2 STOROBE	O	D/A converter 2 strobe pulse. "H" in active.
7	DA3 STOROBE	O	D/A converter 3 strobe pulse. "H" in active.
8	GP STOROBE	O	Gete-pulse generator strobe pulse "H" in active.
9	DM CS	O	Digital title IC(IC1200) chip select signal "H" on communication.
10	TG STROBE	O	SHOTER control strobe pulse.
11	EEPROM ON Ⓗ	O	EEPROM write indication signal.
12	24DIV RESET	O	24-division signal reset pulse. "H" reset
13	R-Y	I	R-Y 24-division signal.
14	B-Y	I	B-Y 24-division signal.
15	Ys	I	Ys 24-division signal.
16	YH	I	Yh 24-division signal.
17	Y IRIS	I	Y iris signal.
18	Y AGC	I	Y signal for AGC control.
19	IRIS POSITION	I	Iris encoding.
20	ZOOM POSITION	I	Zoom encoding.
21	A/D GND	I	Connected to ground. A/D converter minimum voltage.
22	A/D REF	I	A/D convertor max voltage.
23	Vss	I	Connected to ground.
24	Vss	I	Connected to ground.
25	MODE B	I	Selects a microcomputer mode. fixed "H".
26	NC	I	Connected to ground.
27	MODE A	I	Selects a microcomputer mode. fixed "L".
28	VD	I	VD pulse
29,30	NC	–	Opend
31	X OUT	I/O	Crystal connection.
32	–	I	Connected to ground
33	X TAL	O	Crystal connection.
34	FCH MODE	I	Selects a factory function check mode. fixed "L"
35	–	I	Connected to ground
36	AWB TURBO	I	Not used (Selects an AWB turbo mode). fixed "H"
37	NC	–	Opend
38	P-AE2	I	Selects a programmed AE mode.
39	P-AE1	I	Selects a programmed AE mode.
40	P-AE0	I	Selects a programmed AE mode.
41	AF RESET	O	Outputs an AF reset pulse. "L" reset
42	AF P.CONT	O	Provides AF PCBs power control.
43	RESET	I	Inputs a reset pulse. "L" reset
44	–	I	Connected to ground.
45,46	–	I	(An interrupt pulse)
47	CAMERA REQ	O	Outputs a serial communication request pulse. "L" communication request.
48	–	I	Connected to ground.
49	Vss	I	Connected to ground.

Pin No.	Signal name	I/O	Description
50	-	I	Select communication type. fixed "H".
51	S-DATA	I	Inputs data for for serial communications to main MI-COM(IC608).
52	S-DATA	O	Outputs data for serial communications to IC608, IC1003, IC14063, IC1401, IC1402, IC1400, IC1200, and IC902.
53	S-CLOCK	O	Outputs a clock pulse for serial communications.
54	CLOCK OUTⒽ	I	Selects INPUT/OUTPUT on (54). fixed "H"
55	VDD	I	Connected to CAMERA 5V.
56	NC	-	Opened
57	AFⒽ·MANUALⓁ	O	Selects a focus mode. "H" in AF, "L" in MANUAL
58	FACE	O	"H" detects a face color.
59	LENS CAP	O	"H" detects a lens cap.
60,61	-	I	Connected to ground
62	-	I	Connected to CAMERA 5V.
63	P.ON BLK	I	Inputs a power-on blanking signal. "H" in white fade
64	DM BUSY	I	"H" indicates digital memo scrolling / wiping.

3-1-7. Pins of Digital Title IC (IC 1200)

Pin No.	Signal name	I/O	Description
1	TEST 0	I	Connected to ground.
2	Vss	–	Connected to ground.
3	X OUT	O	Connects to LC oscillator.
4	X IN	I	Connects to 10-MHz LC .
5	V_{DD}	–	Connected to the EVER 5 V circuit.
6	PD	O	Outputs PLL phase comparison.
7	Vss	–	Connected to ground.
8	HD	I	Inputs a horizontal synchronizing signal.
9	TEST 1	I	Connected to ground.
10	VD	I	Inputs a vertical synchronizing signal.
11	NTSC Ⓗ/PAL Ⓛ	I	Switches the TV system.
12	XEX-CS	I	Connected to the EVER 5 V circuit.
13	EXS-CLOCK	I	Connected to the EVER 5 V circuit.
14	EXS-DATA	I	Connected to ground.
15	BUSY	O	Outputs "H" level BUSY signal during wiping or scrolling.
16	RESET	I	Inputs a reset signal.
17	V_{DD}	–	Connected to the EVER 5 V circuit.
18	CG IN	I	Connected to ground.
19 ~ 22	–	O	Not used (open).
23	Y(DM OUT)	I	Inputs a digital memory video signal.
24	TITLE CR	O	Output a title signal (R component).
25	TITLE CG	O	Outputs a title signal (G component).
26	TITLE CB	O	Outputs a title signal (B component).
27	–	O	Not used (open).
28	V_{SS}	–	Connected to ground.
29	TITLE CBLK	O	Outputs a title block selection signal (color signal).
30	TITLE YBLK	O	Outputs a title block selection signal (brightness signal).
31	TITLE YG	O	Outputs a title brightness signal (G component).
32	TITLE YR	O	Outputs a title brightness signal (R component).
33	TITLE YB	O	Outputs a title brightness signal (B component).
34	SHADOW	O	Outputs "H" level SHADOW signal during shadowing.
35	–	O	Not used (open).
36	Y BLK K	I	Connected to ground.
37	SEE THROUGH	O	Outputs "H" level SEE THROUGH signal in the see-through mode.
38	–	O	Not used (open).
39	V_{DD}	–	Connected to the EVER 5 V circuit.
40	S-DATA	I	Input data serial communications with IC 1303 (CAMERA MI-COM).
41	S-CLOCK	I	Inputs a clock pulse for serial communications with IC 1303 (CAMERA MI-COM).
42	DM-CS	I	Selects a ship for serial communications with IC 1303 (CAMERA MI-COM).
43	FIELD IN	I	Inputs a field discrimination signal.
44	FIELD OUT	O	Outputs a field discrimination signal.

3-1-8. Pins of Digital Memory Signal Generation IC (IC 1202)

Pin No.	Signal name	I/O	Description
1	Y (DM IN)	I	Outputs a digital memory video signal.
2	Y IN	O	Inputs a camera brightness signal.
3	SANPLE LEVEL	O	Inputs a digital memory read threshold signal.
4	TH COUT.	O	Connected to CAMERA 5 V.
5	TITLE CR	O	Inputs a title signal (R component).
6	TITLE CG	O	Inputs a title signal (G component).
7	TITLE CB	O	Inputs a title signal (B component).
8	GND	O	Connected to ground.
9	RY IN	O	Inputs an R-Y signal.
10	B-Y IN	I	Inputs a B-Y signal.
11	B-Y (DM OUT)	I	Outputs "B-Y and title" signals.
12	CLP	O	Inputs a Chroma blanking.
13	R-Y (DM OUT)	O	Outputs "R-Y and title" signals.
14	TITLE CBLK		Inputs a chroma blanking signal.
15	Y (DM OUT)	I	Outputs "camera brightness and title" signals.
16	TITLE YBLK	I	Inputs a brightness blanking signal.
17	Y CLP	O	Connected to the DC clamp capacitor.
18	Y IN		Inputs a camera brightness signal.
19	Vcc	I	Connected to CAMERA 5 V.
20	TITLE Y G	I	Inputs a title brightness signal (G component).
21	TITLE Y R	I	Inputs a title brightness signal (R component).
22	TITLE Y B	O	Inputs a title brightness signal (B component).
23	TITLE Y GC	O	Makes title brightness signal gain adjustment.
24	TITLE C GC	I	Makes title color signal gain adjustment.

3-2. Recorder Circuit

3-2-1. Outline

Figure I-20 shows the recorder circuits.

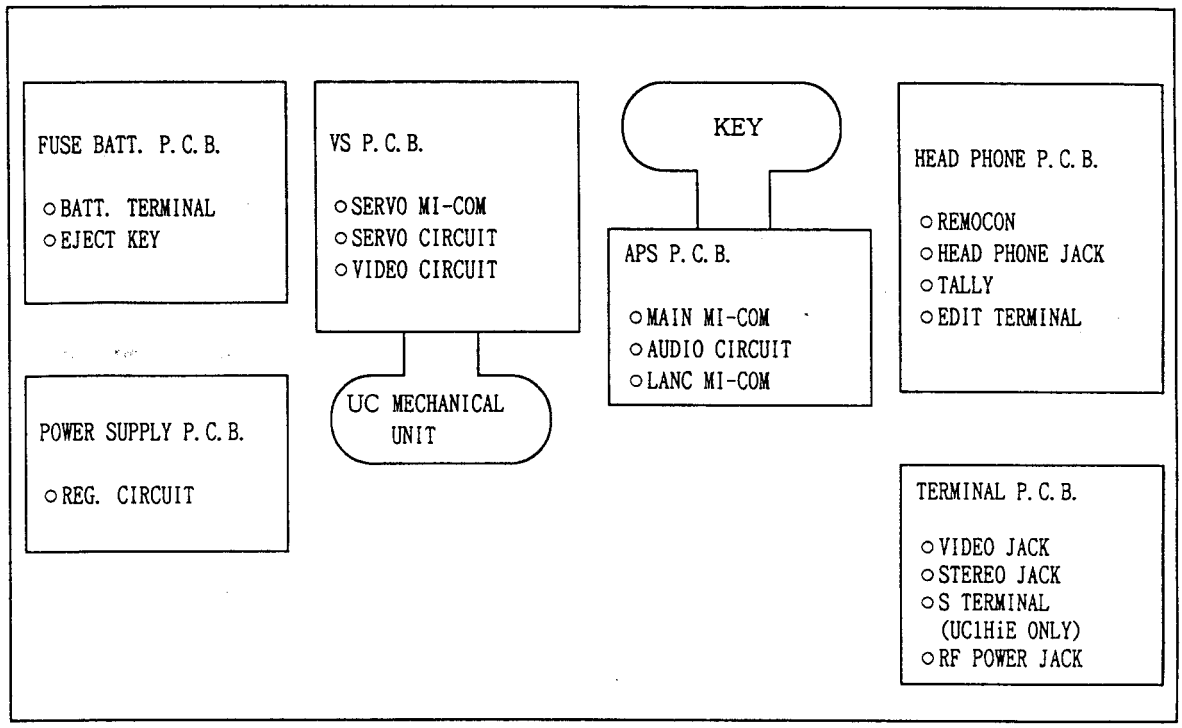


Figure I-20

The each circuits are composed of the following P.C.B.s.

Power circuits	: FUSE BATT. and POWER SUPPLY P.C.B.s
System control circuits	: VS and APS P.C.B.s.
Servo circuits	: VS P.C.B.
Video circuits	: VS P.C.B. (UC1HiE ; designed for high bands.)
Audio circuits	: APS P.C.B.
*Mechanical circuits	: UC mechanical chassis (UC1HiE ; designed for high-band head.)

3-2-2. Power Circuit

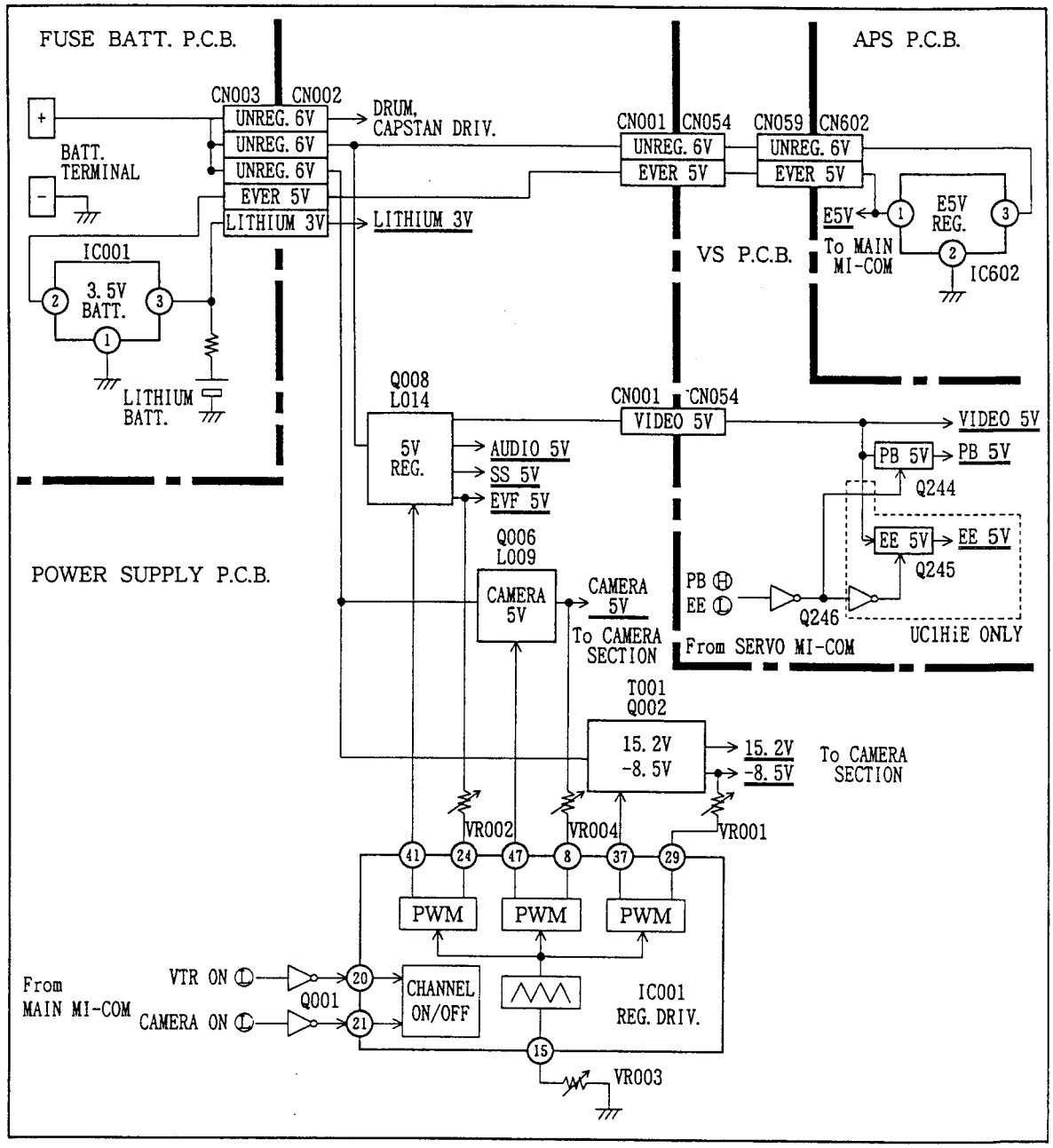


Figure I-21

(1) Power Circuit

The UNREG 6 V circuits from the battery terminal form the following eight power circuits for the recorder:

EVER 5 V

Supplies power mainly to IC 608 (MAIN MI-COM) and outputs the EVER 5 V signal whenever the battery is mounted. The EVER 5 V signal is output in the following .

sequence: The battery is mounted. → The UNREG 6 V signals are output from the battery terminal. → The EVER 5 V signal is output from IC 602 (EVER 5 V REG) on the APS board.

SS 5 V

Supplies power mainly to the system control and servo circuits and outputs the SS 5 V signal whenever the power is turned ON. The SS 5 V signal is output in the following sequence:

The power is turned ON. → The VTR ON (L) signal is output from Pin 29 of IC 608 (MAIN MI-COM). → The VTR ON (L) signal is input to IC 001 (3.5 V REG) via Q 001. → The PWM circuit of IC 001 (3.5 V REG) is activated to output the PWM signal from Pin 41. → Q 008 is activated. → The SS 5 V signal is output.

VIDEO 5 V

Supplies power mainly to the video circuits and outputs the VIDEO 5 V signal whenever the power is turned ON. The VIDEO 5 V signal is output in the same sequence as the SS 5 V signal.

EE 5 V (UC1HiE ONLY)

Supplies power mainly to the EE video circuits and outputs the EE 5 V signal in the EE mode. The EE 5 V signal is output in the following sequence:

The EE (L) signal is output from Pin 14 of IC 051 (SERVO MI-COM) in the EE mode. → Q 245 is activated via Q 246. → The EE 5 V signal is output.

PB 5 V

Supplies power mainly to the PB video circuits and outputs the PB 5 V signal whenever the power is turned ON. The PB 5 V signal is output in the same sequence as the EE 5 V signal.

AUDIO 5 V

Supplies power mainly to the audio circuits and outputs the AUDIO 5 V signal whenever the power is turned ON. The AUDIO 5 V signal is output in the same sequence as the SS 5 V signal.

EVF 5 V

Supplies power mainly to the EVF circuits and outputs the EVF 5 V signal whenever the power is turned ON. The EVF 5 V signal is output in the same sequence as the SS 5 V signal.

LITHIUM 3 V

Supplies backup power mainly to the quartz and digital titles and outputs the LITHUM 3 V signal even when the battery is demounted. The LITHUM 3 V signal is output from the IC 001 (3.5 V REG) when the battery is mounted and from the lithum cell when the battery is demounted. It is also output from IC 001 (3.5 V REG) to charge the lithum cell when the battery is mounted.

(2) Power on

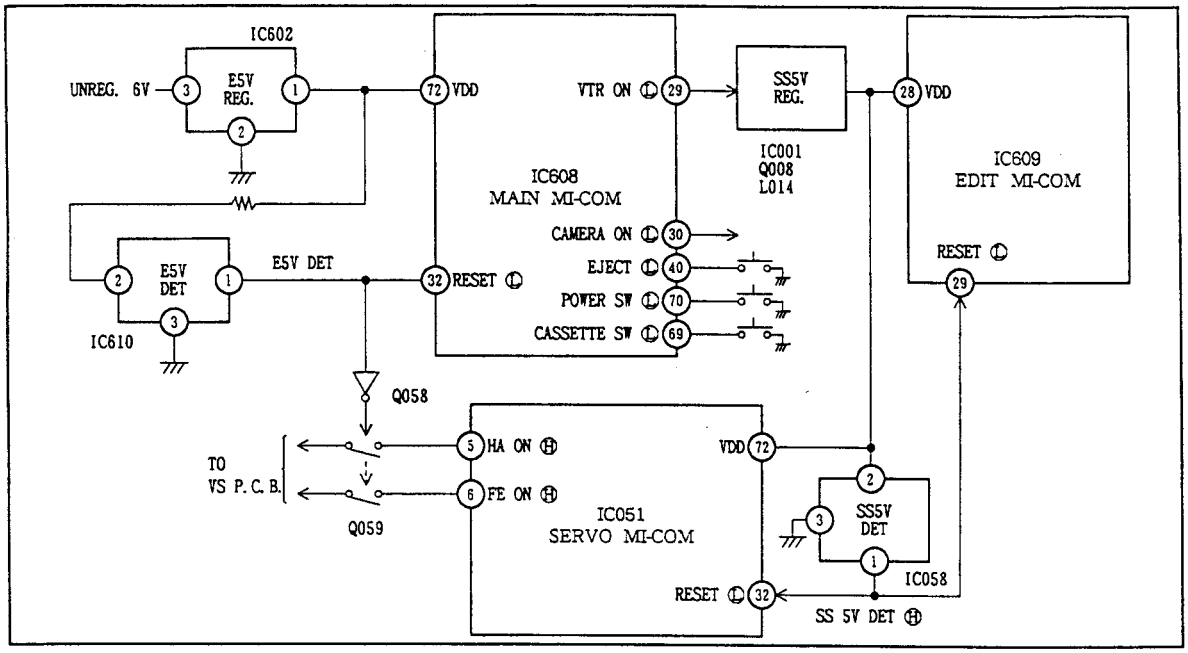


Figure I-22

Battery Mounting

The following two circuits are activated only when the battery is mounted.

- EVER 5 V
- IC 608 (MAIN MI-COM) (Immediately enters the STOP mode.)

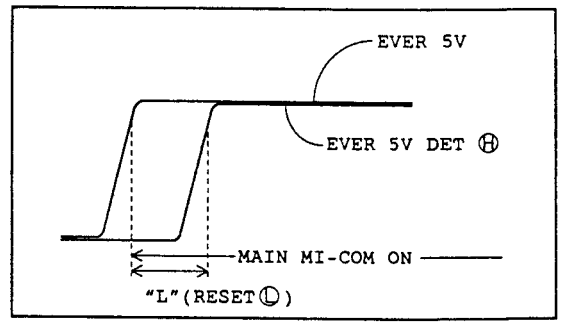


Figure I-23

When the battery is mounted, the individual power circuits operate in the following sequence:

The UNREG 6 V signals are output from the battery terminal. → The EVER 5 V signal is output from Pin 1 of IC 602 (EVER 5 V REG). → The EVER 5 V signal is fed to Pin 72 of IC 608 (MAIN MI-COM) simultaneously with Pin 2 of IC 610 (EVER 5 V DET). → Slightly after the EVER 5 V signal, the EVER 5 V DET (H) signal is set to "H" level for input to Pin 32 of IC 608 (MAIN MI-COM). → IC 608 (MAIN MI-COM) is reset and activated after detecting the period in which the EVER 5 V DET signal is at "L" level. → The VTR ON (L) signal is output from Pin 29 of IC 608 (MAIN MI-COM) to activate the IC 001 (SS 5 V REG). → The SS 5 V signal is input to Pin 72 of IC 051 (SERVO MI-COM) and then to Pin 2 of IC 058 (SS 5 V DET). → Slightly after the SS 5 V signal, the SS 5 V DET (H) signal is set to "H" level for input to Pin 32 of IC 051 (SERVO MI-COM). → IC 051 (SERVO MI-COM) is reset and activated after detecting the period in which the SS 5 V DET (H) signal is at "L" level. → IC 051 (SERVO MI-COM) checks whether the mechanical circuits are in the predetermined mode and, if not, returns them to that mode. → IC 051 (SERVO MI-COM) informs IC 608 (MAIN MI-COM) that the mechanical circuits are in the predetermined mode (in serial communications). → IC 608 (MAIN MI-COM) sets the VTR ON (L) signal to "H", deactivates IC 051 (SERVO MI-COM), and enters the STOP

mode (even if the mechanism position is not normal, it enters the stop mode after waiting for a while), in which IC 608 (MAIN MI-COM) performs no communication with any other circuit and accepts only the POWER and EJECT keys.

POWER ON

If the power is turned ON, IC 608 (MAIN MI-COM) is activated in the STOP mode upon detecting the POWER key signal via Pin 70 to output the VTR ON (L) and CAMERA ON (L) signals from Pins 29 and 30 respectively and activate the individual power circuits and microcomputers.

EJECT

If the EJECT key is pressed while the battery is mounted, the power will be turned ON once and then turned OFF again after the EJECT key is pressed.
The individual power circuits operate in the following sequence: IC 608 (MAIN MI-COM) is activated in the STOP mode upon detecting the EJECT key signal via Pin 40 to output the VTR ON (L) signal from Pin 29 and activate IC 001 (SS 5 V REG) and IC 058 (SERVO MI-COM). → IC 608 (MAIN MI-COM) directs IC 058 (SERVO MI-COM) (in serial communication) to perform an eject operation. → IC 058 (SERVO MI-COM) controls the mechanical circuits to perform an eject operation and, upon completing the eject operation, informs IC 608 (MAIN MI-COM) to that effect (in serial communications). → IC 608 (MAIN MI-COM) sets the VTR ON (L) signal to "H", deactivate IC 001 (SS 5 V REG) and IC 051 (SERVO MI-COM), and enters the STOP mode.

CASSETTE INSERTION

If a cassette is inserted while the battery is mounted, the power will be turned ON once and then turned OFF again after an loading operation.
The individual power circuits operate in the same sequence as when the EJECT key is pressed after IC 608 (MAIN MI-COM) detects insertion of the cassette via Pin 69.

POWER OFF

If the power is turned OFF, IC 608 (MAIN MI-COM) detects the POWER key signal via Pin 70 and informs other microcomputers to that effect (in serial communications). → Upon getting ready for turning OFF of the power, the other microcomputers inform IC 608 (MAIN MI-COM) to that effect (in serial communications). → IC 608 (MAIN MI-COM) sets the VTR ON (L) from Pin 29 and CAMERA ON (L) signal from Pin 30 to "H" level, deactivates the other power circuits, and then enters the STOP mode.

TURNING OFF BY SWITCHES OTHER THAN POWER SWITCH

If the battery is demounted while the power is turned ON, the individual power circuits and microcomputers will be deactivated. If the microcomputers enter an uncertain mode at this time, recording or erasing errors may result. To prevent this, the EVER 5 V DET (H) signal output from the IC 610 (EVER 5 V DET) turns ON and OFF the lines of the HA ON (H) and FE ON (H) signals output from Pins 5 and 6 respectively of IC 051 (SERVO MI-COM). For example, if the EVER 5 V circuit is deactivated, the EVER 5 V DET (H) signal will be set to "L" level to turn OFF the lines of the HA ON (H) and FE ON (H) signals.

3-2-3. System Control Circuit

System control is provided mainly by IC 608 (MAIN MI-COM)and IC 051 (SERVO MI-COM). Input to these system control circuits are operation key, mechanical switch, error detection, servo data, wireless remote control signals, etc. The two microcomputers read and process these signals to control various operations.

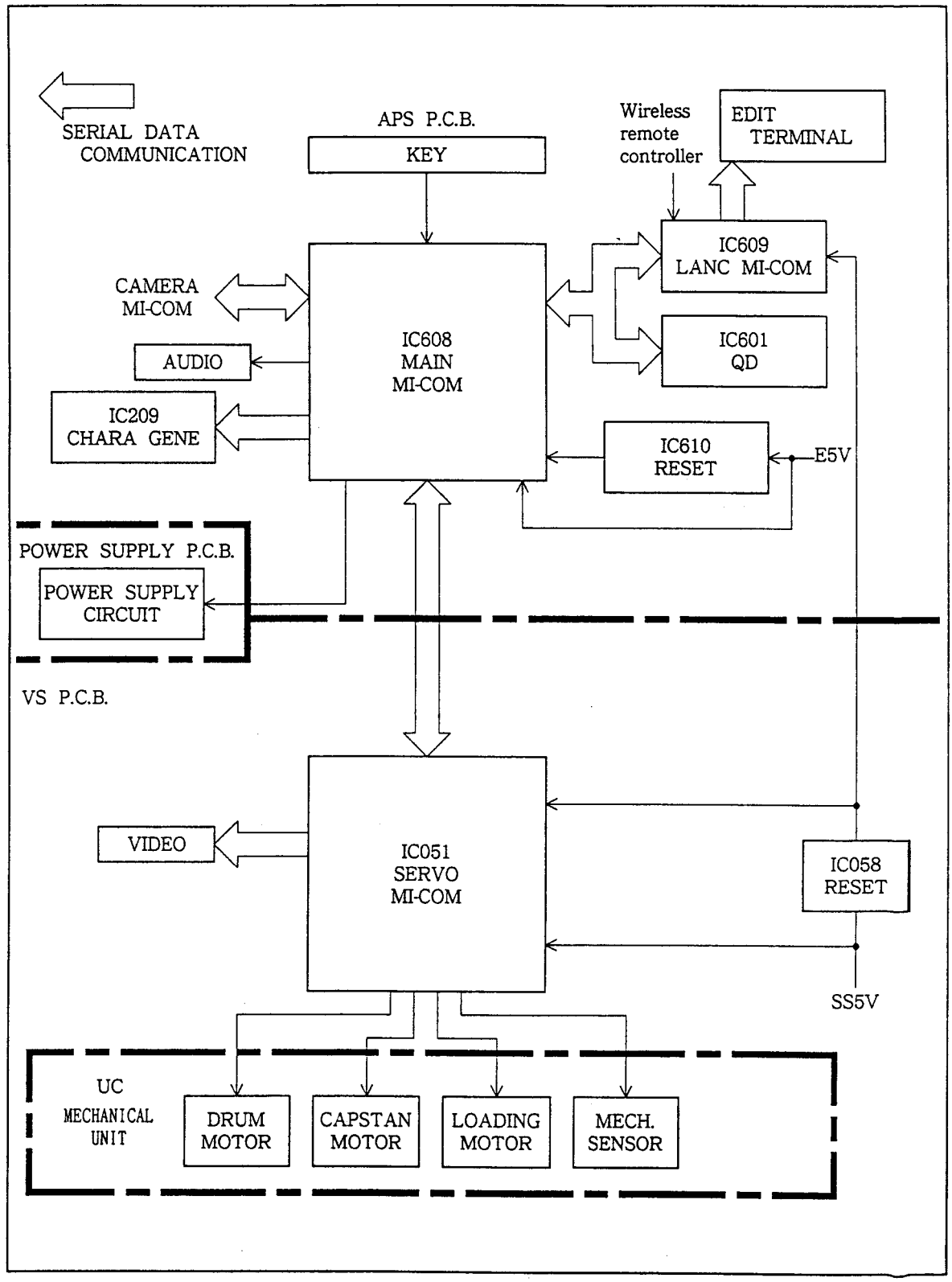


Figure I-24

(1)Serial Communications

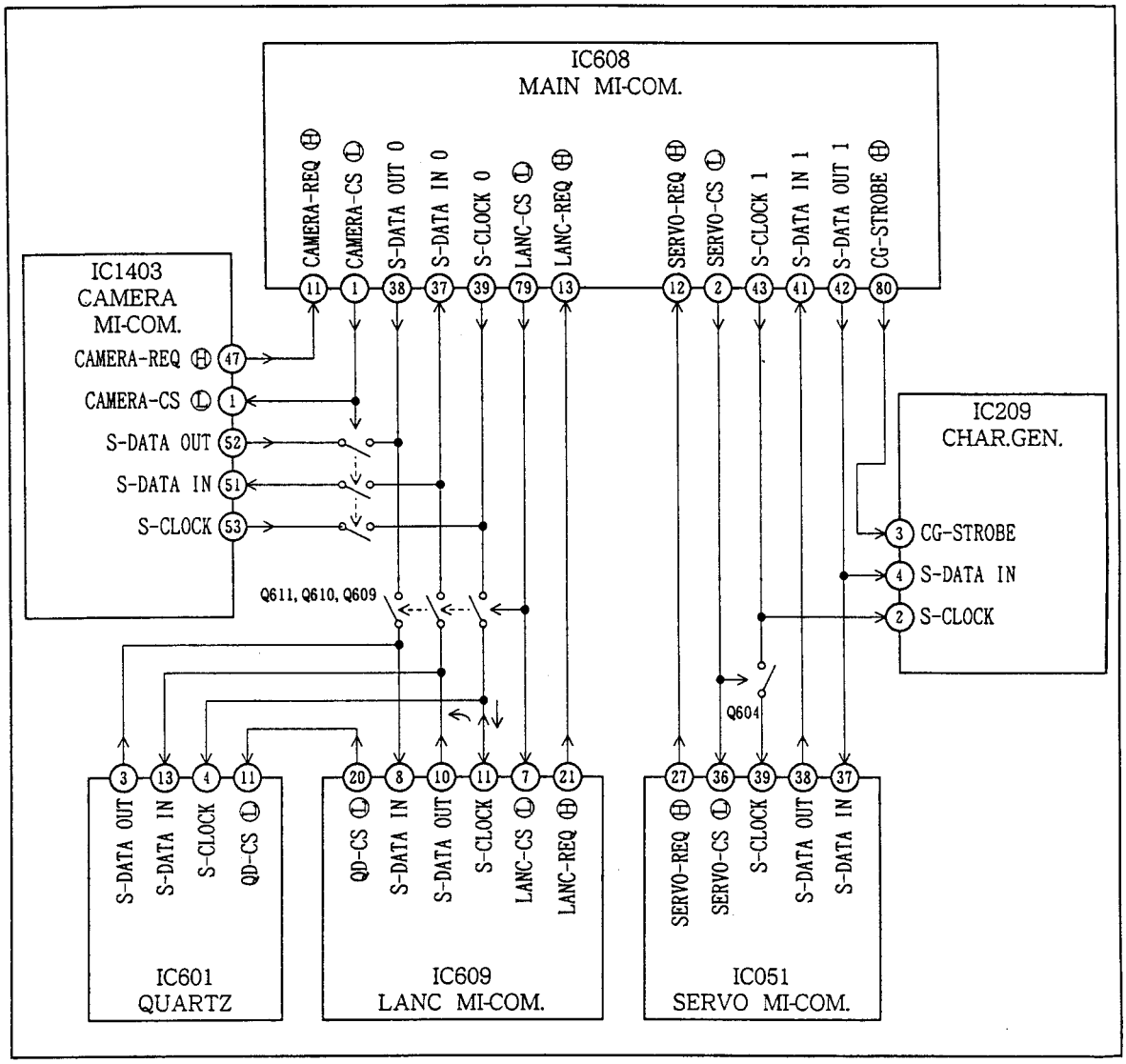


Figure I-25

Figure I-25 shows the serial communication circuits of Model UCS1A and UC20A. As is clear from Figure I-25, serial communications are supervised by IC 608 (MAIN MI-COM), which uses the chip select signal to turn ON and OFF the communication lines of the other circuits.

Figure I-26 shows the timing of the serial communications between IC 608 (MAIN MI-COM) and IC 051 (SERVO MI-COM), IC 1403 (CAMERA MI-COM), and IC 609 (LANC MI-COM). IC 608 (MAIN MI-COM) senses the need for serial communications upon receiving a request signal from the other circuits and uses the chip select signal to turn ON the communication lines upon getting ready for serial communications.

Serial communications is performed once at every 1 vertical period.

Every 500 microseconds or so, IC 608 (MAIN MI-COM) checks whether no serial communication proceeds and, if so, sends appropriate data to IC 209 (CHAR.GEN.) with the timing shown in Figure I-27. IC 209 (CHAR.GEN.) will judge the data to be valid if it is followed by the CG-STROBE (H) signal.

Serial communications is performed between IC 609 (LANC MI-COM) and IC 601 (QUARTZ) under the supervision of IC 609 with priority to those between IC 609 and IC 608 (MAIN MI-COM).

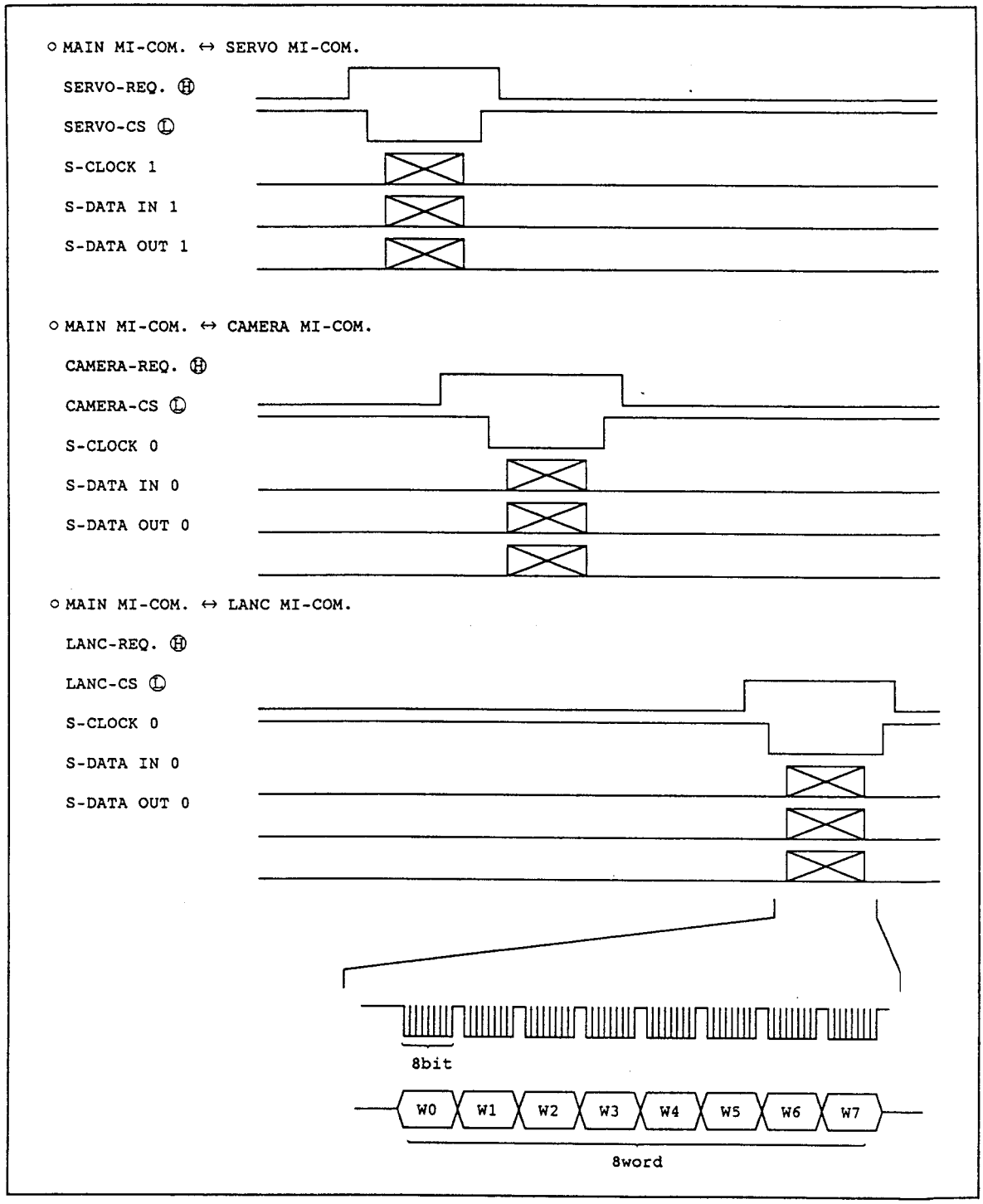


Figure I-26

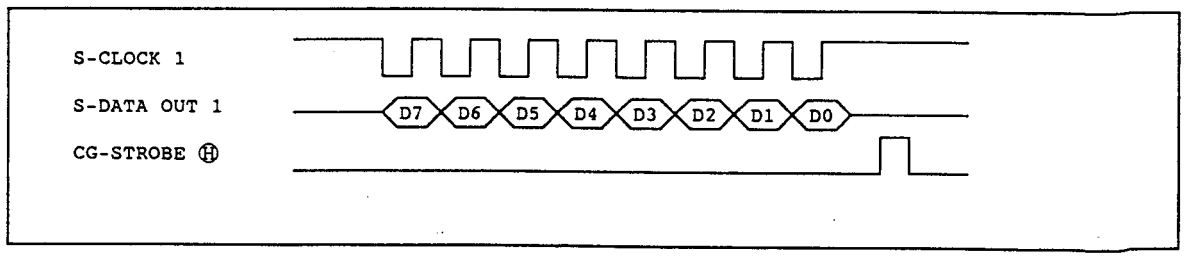


Figure I-27

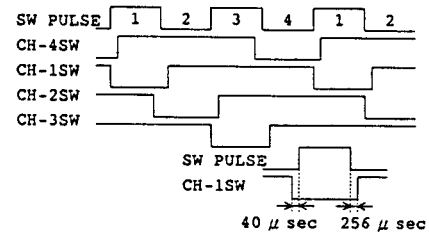
(2) Microcomputer Pins

Pins of IC 608 (MAIN MI-COM)

Pin No.	Signal name	I/O	Description
1	CAMERA-CS Ⓛ	O	Outputs "L" level LOW CUT ON signal during serial communications between IC 608 (MAIN MI-COM) and IC 1403 (CAMERA MI-COM).
2	SERVO-CS Ⓛ	O	Outputs "L" level LOW CUT ON signal during serial communications between IC 608 (MAIN MI-COM) and IC 051 (SERVO MI-COM).
3	LOW CUT ON Ⓛ	O	Outputs "L" level LOW CUT ON signal during automatic wind sound reduction.
4	MATRIX OFF Ⓛ	O	Outputs "L" level MATRIX OFF signal when the stereo audio matrix circuit is off.
5	BILINGUAL SEL1	O	Outputs a bilingual select signal.
6	BILINGUAL SEL2		
7	ZOOM TELE Ⓛ	O	Outputs a zoom control signal.
8	ZOOM WIDE Ⓛ		
9	ZOOM SPEED UP Ⓛ		
10	TALLY	O	Outputs a tally LED control signal. (Turns on the tally LED lamp when the TALLY signal is set to "H" level.)
11	CAMERA REQUEST Ⓗ	I	Outputs a request signal from IC 1403 (CAMERA MI-COM).
12	SERVO REQUEST Ⓗ	I	Outputs a request signal from IC 051 (SERVO MI-COM).
13	LANC REQUEST Ⓗ	I	Outputs a request signal from IC 609 (LANC MI-COM).
14	SERVO RESET Ⓛ	I	Outputs a reset signal for IC 051 (SERVO MI-COM).
15	PIN DET Ⓗ	I	Outputs "H" level PIN DET signal when the audio pin is connected.
16	MONO DET Ⓛ	I	Outputs "L" MONO DET level signal during monaural recording.
17	BILINGUAL DET Ⓗ	I	Outputs "H" level BILINGUAL DET signal during bilingual recording.
18	–	I	Not used.
19	MODE 2	I	Not used.
20	MODE 1		
21	FCH ON	I	Not used.
22	GND	–	Connected to ground.
23	EEP ON Ⓗ	I	Outputs "H" level EEP ON signal during writing to EEPROM.
24	UC20 Ⓗ/UC1Ⓛ	I	Selects a unit type.
25	MODE 3	I	Not used.
26	–	O	Not used.
27	CAMERA LED Ⓛ	O	Outputs "L" level CAMERA LED signal in the camera mode.
28	RECORDER LED Ⓛ	O	Outputs "L" level RECORDER LED signal in the recorder mode.
29	VTR ON Ⓛ	O	Controls the power to the recorder.
30	CAMERA ON Ⓛ	O	Controls the power to the camera.
31	–	I	Connected to ground.
32	RESET Ⓛ	I	Inputs a reset signal.
33	GND	–	Connected to ground.
34	X'TAL OUT	O	Connects 8.0 MHz X'TAL.
35	X'TAL IN	I	
36	–	I	Not used.
37	S-DATA IN 0	I	Inputs data for serial communications.
38	S-DATA OUT 0	O	
39	S-CLOCK 0	O	

Pin No.	Signal name	I/O	Description
40	EJECT Ⓛ	I	Inputs an EJECT switch signal.
41	S-DATA IN 1	I	Inputs data for serial communications.
42	S-DATA OUT 1	O	
43	S-CLOCK 1	O	
44	–	I	Not used.
45	BATT SENS	I	Inputs a battery power shortage indication signal.
46	WIDE SW	I	Inputs a ZOOM switch signal (with two values).
47	TELE SW	I	
48	CG SEL	I	Selects the destination of CG (R669 → UC1HiE/UC20E: 10 KΩ)
49	R KEY	I	Inputs recorder key signals.
50	C KEY 2	I	Inputs camera key signals.
51	C KEY 1		
52	GND	–	Connected to ground.
53	EVER 5V	I	Input the EVER 5 V signal.
54			
55	S TERMINAL DET Ⓛ	I	Inputs a S Pin connection signal. (UCS1A ONLY)
56	FADE KEY Ⓛ	I	Inputs a fade key signal.
57	MP Ⓗ/ME Ⓛ	I	Inputs a tape detection switch signal.
58	HiMP Ⓛ		
59	TRIG Ⓛ	I	Inputs a trigger switch signal.
60	REC PROOF Ⓛ	I	Inputs a record disable switch signal.
61	(+) KEY Ⓛ	I	Inputs "+" and "-" key signals.
62	(-) KEY Ⓛ		
63	ME Ⓛ	O	Outputs "L" level ME signal when ME tape is used.
64	HiMP Ⓛ OUT	O	Outputs "L" level HIMP signal when HIMP tape is used.
65	Hi8 Ⓗ/NORMAL Ⓛ	O	Outputs "H" level HI8 signal and "L" level NORMAL signal.
66	ON SCREEN Ⓛ	O	Outputs "L" level ON SCREEN signal during on-screen display.
67	COMB ON Ⓗ	O	Outputs "H" level COMB ON signal during composite input or playback.
68	COMP IN Ⓛ	O	Outputs "L" level COMP IN signal during composite input or playback.
69	CASSETTE IN Ⓛ	I	Inputs a garage down switch signal.
70	POWER SW Ⓛ	I	Inputs a power switch signal.
71	–	I	Not used.
72	VDD	I	Inputs a power signal for IC 608 (MAIN MI-COM).
73	VSS	–	Grounds IC 608 (MAIN MI-COM).
74	NC	–	Connected to EVER 5V.
75	DIRECT 150	O	Controls switching of microphone direction angles.
76	DIRECT 120		
77	DIRECT 90		
78	ENH ON Ⓗ	O	Controls turning ON of the enhancer.
79	LANC-CS Ⓛ	O	Outputs "L" level LANC-CS signal during serial communications between IC 608 (MAIN MI-COM) and IC 609 (LANC MI-COM).
80	CG-STROBE Ⓗ	O	Outputs a strobe pulse for IC 209 (CHAR.GEN.).

Pins of IC 051 (SERVO MI-COM)

Pin No.	Signal name	I/O	Description
1	1/2 SW PULSE	O	Outputs a 1/2 switching pulse.
2	SW PULSE	O	Outputs a switching pulse.
3	V MASK Ⓛ	O	Outputs a V-period mask pulse (cancels jitter compensation).
4	LOADING CONT Ⓗ	O	Outputs a loading motor control signal.
5	HA ON Ⓗ	O	Outputs "H" level HA ON signal when the head amplifier is activated.
6	FE ON Ⓗ	O	Outputs "H" level FE ON signal when the flying erase head is activated.
7	CH-4 SW	O	Output crosstalk prevention signal from other heads during playback. They mute one another at "H" level. 
8	CH-3 SW		
9	CH-2 SW		
10	CH-1 SW		
11	NC	–	Not used.
12	CAMERA Ⓗ/LINE Ⓛ	O	Outputs "H" level CAMERA signal during camera input and "L" level LINE signal during line input.
13	SP Ⓗ/LP Ⓛ	O	Outputs "H" level SP signal and "L" level LP signal.
14	PB Ⓗ/EE Ⓛ	O	Outputs "H" level PB signal and "L" level EE signal.
15	JOG Ⓗ	O	Outputs "H" level JOG signal during special playback.
16	NC	–	Not used.
17	CAPSTAN ON Ⓗ	O	Outputs "H" level CAPSTAN ON signal when the capstan is on.
18	CAPSTAN FWD Ⓗ	O	Outputs "H" and "L" level CAPSTAN FWD signals when the capstan is directed forward and backward respectively.
19	MODE SW 1	I	Inputs mechanical circuit position signals.
20	MODE SW 2		
21	MODE SW 3		
22	BOT Ⓗ	I	Inputs a beginning-of-tape (BOT) signal.
23	EOT Ⓗ	I	Inputs an end-of-tape (EOT) signal.
24	AUDIO MUTE Ⓗ	O	Outputs "H" level signal during audio muting.
25	C(ACK)	I	Inputs the ACK (Automatic Chrominance Killer) signal.
26	VIDEO MUTE Ⓗ	O	Outputs "H" VIDEO MUTE level signal during video muting.
27	SARVO REQEST Ⓗ	O	Outputs a communication request signal to IC 608 (MAIN MI-COM).
28	VIDEO STROBE	O	Outputs a strobe pulse to VIDEO IC.
29	JITTER ERROR MIX Ⓗ	O	Controls the jitter error mix switch. Outputs "H" level JITTER ERROR MIX signal when a jitter error is mixed.
30	TAPE LED	O	Controls the tape sensor LED lamp.
31	–	–	Not used.
32	RESET Ⓛ	I	Inputs a reset signal.
33	VSS	–	Grounds IC 051 (SERVO MI-COM).
34	X'TAL OUT	O	Connects X'TAL.
35	X'TAL IN	I	

Pin No.	Signal name	I/O	Description
36	SERVO-CS Ⓛ	I	Inputs outputs data for serial communications.
37	S-DATA IN	I	
38	S-DATA OUT	O	
39	S-CLOCK	I	
40	CASSETTE IN Ⓛ	I	Inputs a garage down signal.
41	S DET Ⓗ	I	Inputs "H" level S DET signal when a high band is detected.
42	VIDEO DATA OUT	O	Outputs data to VIDEO IC.
43	VIDEO CLOCK		
44	TEST KEY	–	Not used.
45	UC 20Ⓗ/UC1Ⓛ	I	Selects unit types.
46	T REEL SENS.IN	I	Inputs a reel sensor signal.
47	S REEL SENS.IN		
48	DOC Ⓛ	I	Inputs a dropout pulse.
49	DEW Ⓗ	I	Inputs a dewdetecting signal.
50	ATF ERROR	I	Inputs an ATF error signal.
51	SW POINT	O	Inputs a switching point signal.
52	GND	–	Connected to ground.
53	SS 5V	I	Inputs SS 5 V signal.
54			
55	LOADING SENS.	I	Inputs a loading motor sensor signal.
56	SP Ⓗ/LP Ⓛ	I	Inputs "H" level SP signal and "L" level LP signal.
57	CLOG Ⓗ	I	Inputs "H" level recording failure signal.
58	C SYNC	I	Inputs a composite synchronizing signal.
59	ATF LOCK Ⓛ	I	Inputs "L" level ATF LOCK signal when ATF is locked.
60	DRUM PG	I	Inputs a drum PG signal.
61	DRUM FG	I	Inputs a drum FG signal.
62	CAPSTAN FG	I	Inputs a capstan FG signal.
63	UNLOAD Ⓗ	O	Outputs an unloading command.
64	LOAD Ⓗ	O	Outputs a loading command.
65	ATF N	O	Sets ATF bias.
66	DRUM ON Ⓗ	O	Outputs "H" level DRUM ON signal when the drum is on.
67	CAPSTAN PWM	O	Outputs a capstan error signal.
68	DRUM PWM	O	Outputs a drum error signal.
69	CAPSTAN FG	I	Inputs a capstan FG signal.
70	F CH Ⓗ	–	Not used.
71	SS 5V	I	Input SS 5 V signal.
72	VDD	I	Inputs a power signal for IC 051 (SERVO MI-COM).
73	VSS	–	Grounds IC 051 (SERVO MI-COM).
74	–	–	Connected to SS 5V.
75	DRUM BRAKE Ⓗ	O	Outputs "H" level DRUM BRAKE signal when the drum brake is braked.
76	TS B	O	Outputs an ATF sample-and-hold pulse (detects revers locking).

Pin No.	Signal name	I/O	Description
77	ATF SW	O	Outputs an ATF BPF switching signal. Outputs "L" level ATF SW signal for f1 and f3 tracks. Outputs "H" level ATF SW signal for f2 and f4 tracks.
78	SEL 2	O	Outputs an ATF pilot control signal.
79	SEL 1		
80	JOG VD	O	Outputs a pseudo VD (during special playback).

PILOT	f1	f2	f3	f4
SEL 1	H	L	H	L
SEL 2	H	H	L	L

Pins of IC 609 (LANC MI-COM)

Pin No.	Signal name	I/O	Description
1 to 6	–	–	Not used.
7	LANC-CS Ⓛ	I	Inputs/outputs data for serial communications.
8	S-DATA IN	I	
9	NC	–	Not used.
10	S-DATA OUT	O	Inputs/outputs data for serial communications.
11	S-CLOCK 2	I,O	
12	VSS	O	Grounds IC 609 (LANC MI-COM).
13 to 18	NC	–	Not used.
19	QD WRITE Ⓗ/READ Ⓛ	O	Controls read from and write to QD IC.
20	QD-CS Ⓗ	O	Outputs a communication chip select signal for QD IC.
21	LANC-REQEST Ⓗ	O	Outputs a communication request signal to IC 608 (MAIN MI-COM).
22	GND	–	Connected to ground.
23	LANC DATA OUT	O	Outputs data for IC 609 (LANC IC).
24	REMOCON DATA IN	I	Inputs remote control data.
25,26	NC	–	Not used.
27	X'TAL IN	I	Connects X'TAL.
28	VDD	I	Inputs a power signal for IC 609 (LANC MI-COM).
29	RESET Ⓛ	I	Inputs a reset signal.
30	EVF VD IN	I	Inputs an EVF VD signal.
31	LANC DATA IN	I	Inputs data for IC 609 (LANC IC).
32	NC	–	Not used.

(3) Safety Mechanism

① Battery Power Shortage Detection

Battery power shortage is detected in the following three stages:

(UNDER CUT 1)
If the battery voltage remains below 5.65 V for more than 2 seconds, the LED lamp (red or green) will stop lighting and instead start flickering while "BATT" indication will flicker in the EVF, warning of battery power shortage. In this condition, the camcorder will continue normal operation without rejecting input key signals.
If the voltage across the UNREG 6 V circuits drops below a specified value, the voltage of the BATT SENS signal input to Pin 45 of IC 608 (MAIN MI-COM) will also drop, causing it to detect UNDER CUT 1. IC 608 (MAIN MI-COM) changes the data for IC 209 (CHARA-GEN), warning of battery power shortage in the EVF. At the same time, the CAMERA LED (L) and RECORDER LED (L) signals are output from Pins 27 and 28 respectively of IC 608 (MAIN MI-COM), causing the LED lamp (red or green) to flicker.

(UNDER CUT 2)
If the voltage across the UNREG 6 V circuits further drops and remains below 5.45 V for more than 2 seconds, the camcorder will automatically enter the STOP mode and turn OFF the power.
In this event, the voltage of the BATT SENS signal input to Pin 45 of IC 608 (MAIN MI-COM) will drop, causing it to detect UNDER CUT 2 in the same way as UNDER CUT 1.

(Shut off)
If the battery voltage drops suddenly to cause either the SS 5 V or EVER 5 V signal to drop below 4.5 V, IC 610 (RESET) and IC 051 (SERVO MI-COM) will detect the voltage drop and output "L" level signals to reset IC 608 (MAIN MI-COM) and turn OFF the power immediately. If the SS 5 V signal, in particular, drops below 4.5 V, IC 610 (RESET) and IC 051 (SERVO MI-COM) will also reset IC 602 (SERVO MI-COM) to prevent malfunction of the mechanical circuit.

② Dew detection

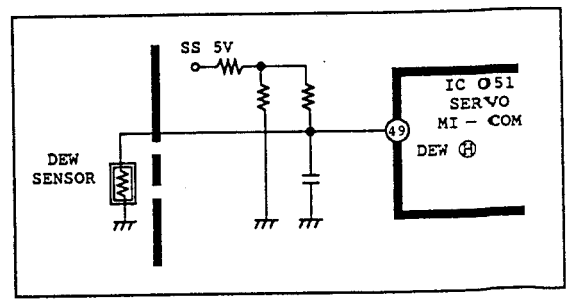


Figure I-28

The camcorder is provided with a dewing detection mechanism to prevent tape jamming. If dewing is detected during operation, the LED lamp (red or green) will stop lighting and instead start flickering while "DEW" indication will flicker in the EVF, warning of dewing. In this event, the mechanical circuits will enter the STOP mode, inhibiting loading of any new tape inserted while dewing persists. At the same time, the one-hour timer built in IC 051 (SERVO MI-COM) will also be activated. Consequently, "DEW" indication will continue to flicker as long as the power is kept ON. However, as the EJECT key cannot be disabled by dewing the tape is unloaded with the drum stopped.

Upon occurrence of dewing, the resistance of the DEW sensor on the mechanical chassis will increase together with the voltage of the DEW (H) signal input to Pin 49 of IC 051 (SERVO MI-COM). If these increases exceed a specified value, IC 051 (SERVO MI-COM) will sense dewing and take appropriate actions.

③ Tape End Check

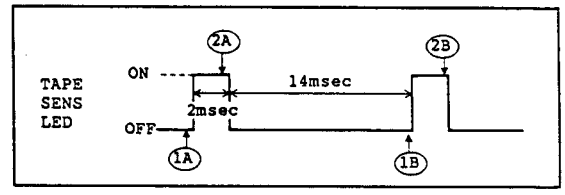


Figure I-29

Running the tape beyond its end may damage the tape guide or strain the drum with the tape. To prevent this, the camcorder checks whether the beginning-of-tape (BOT) or end-of-tape (EOT) is encountered and, if so, stops running of the tape immediately.
The tape end detection LED lamp is turned ON and OFF by the TAPE LED signal output from Pin 30 of IC 051 (SERVO MI-COM) and flickers with the frequency shown in Figure I-29 in any mode. IC 051 (SERVO MI-COM) reads the BOT (H) and EOT (H) signals input to its Pins 22 and 23 at the positions 2A and 2B (shown in Figure I-29) respectively and will sense the tape end if either of the two signals proves to be at "L" level at the two positions consecutively. IC 051 (SERVO MI-COM) also reads the signals at the positions 1A and 1B and will sense external light if either of them proves to be at "L" level at the two positions consecutively. In this case, it will cancel tape end check.
If both the two signals prove to be at "L" level at the two positions 2A and 2B or 1A and 1B consecutively, IC 051 (SERVO MI-COM) will sense no cassette loaded, causing "TAPE" indication to flicker in the EVF.

④ Pause Timer

In the REC. PAUSE or STILL mode, when running of the tape pauses, the drum rotates with the tape wound on it. Leaving the drum rotating in this condition may wear the tape or clog the head. To prevent this, the camcorder is equipped with the pause timer, which switches it from the REC. PAUSE mode to the STOP mode by turning OFF the power or from the STILL mode to the STOP mode without turning off the power after an elapse of five minutes following the pause.

⑤ Error Stop

Any error in the rotating parts (i.e. drum, capstan, loader, and reel) may cause tape jamming or mechanical damage. If any such error is detected, the camcorder is designed to take different corrective actions in different modes and warn of the error with the LED lamps lighting on the main body and "EJECT" indication flickering in the EVF.

Errors	Conditions	Error detecting signals
Drum error	1. Error detection time: At start time or during normal operation 2. FG frequency during normal operation: 225 Hz 3. Error detection level: At start time: 112.5 Hz or less During normal operation: 22.5 Hz or less In emergency: 93% or more of the period when the D-PWM signal is ON. 4. Error detection period: At start time: 2 sec During normal operation: 0.5 sec In emergency: 100 msec successively after start time	DRUM FG signal input to Pin 61 of IC 051 (SERVO MI-COM)
Capstan error	1. Error detection time: At start time or during normal operation 2. FG frequency during normal operation: 1340 Hz 3. Error detection level: At start time: 268 Hz or less During normaloperation: 54 Hz or less 4. Error detection period: 2 sec	CAPSTAN FG signal input to Pin 62 of IC 051 (SERVO MI-COM)
Reel error	1. Error detection time: At any time 2. Condition of error detection: 2048 or more CAPSTAN FG signals per half cycle of T and S reels (only take-up reel)	T REEL SENS. IN, S REEL SENS. IN, and CAPSTAN FG signals input to Pins 46, 47, and 62 respectively of IC 051 (SERVO MI-COM)
Loader error	1. Error detection time: During mode switching 2. Condition of error detection: Failure to reach a desired position within the following periods: 2 sec (between ejection and loading) 5 sec (between unloading and stop) 2 sec (between stop and pinch-on	MODE SW 1, 2, and 3 signals input to Pins 19, 20, and 21 of IC 051 (SERVO MI-COM)

< Corrective Actions for Detected Errors >

	Cassette insertion	During loading	During unloading	After loading	During tape running	During mode switching
Drum error	Pop-up 1	Pop-up 1	Pop-up 2	Error stop	Error stop	Error stop
Capstan error	Error stop	Error stop	Error stop	Error stop	Error stop	Error stop
Reel error	————	————	Error stop	Error stop	Error stop	Error stop
Loader error	Pop-up 1	Pop-up 1	Error stop	Error stop	————	Error stop

- Pop-up 1: Error indication → Unloading → Pop-up → Error clearance
- Pop-up 2: Error indication → DEW EJECT → Pop-up → Error clearance
- Error stop: Error indication → Error stop position (No error clearance without ejection)

3-2-4. Servo Circuit

(1) Drum Motor Servo Circuit

Figure I-30 shows the path of the drum motor error signal. Figure I-31 shows the jitter error circuit.

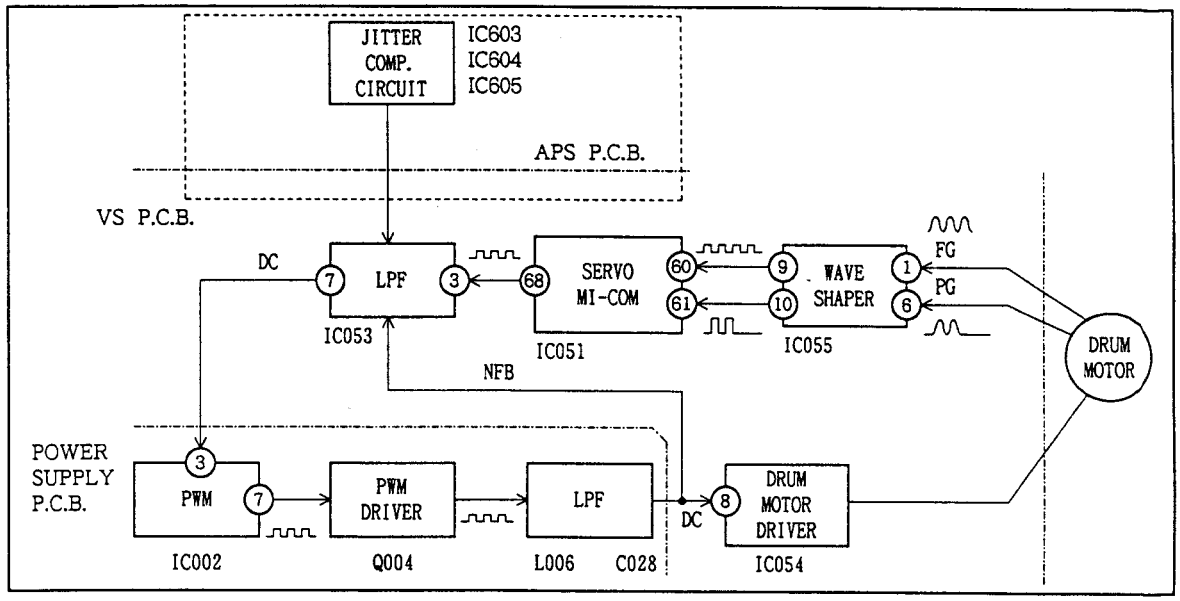


Figure I-30

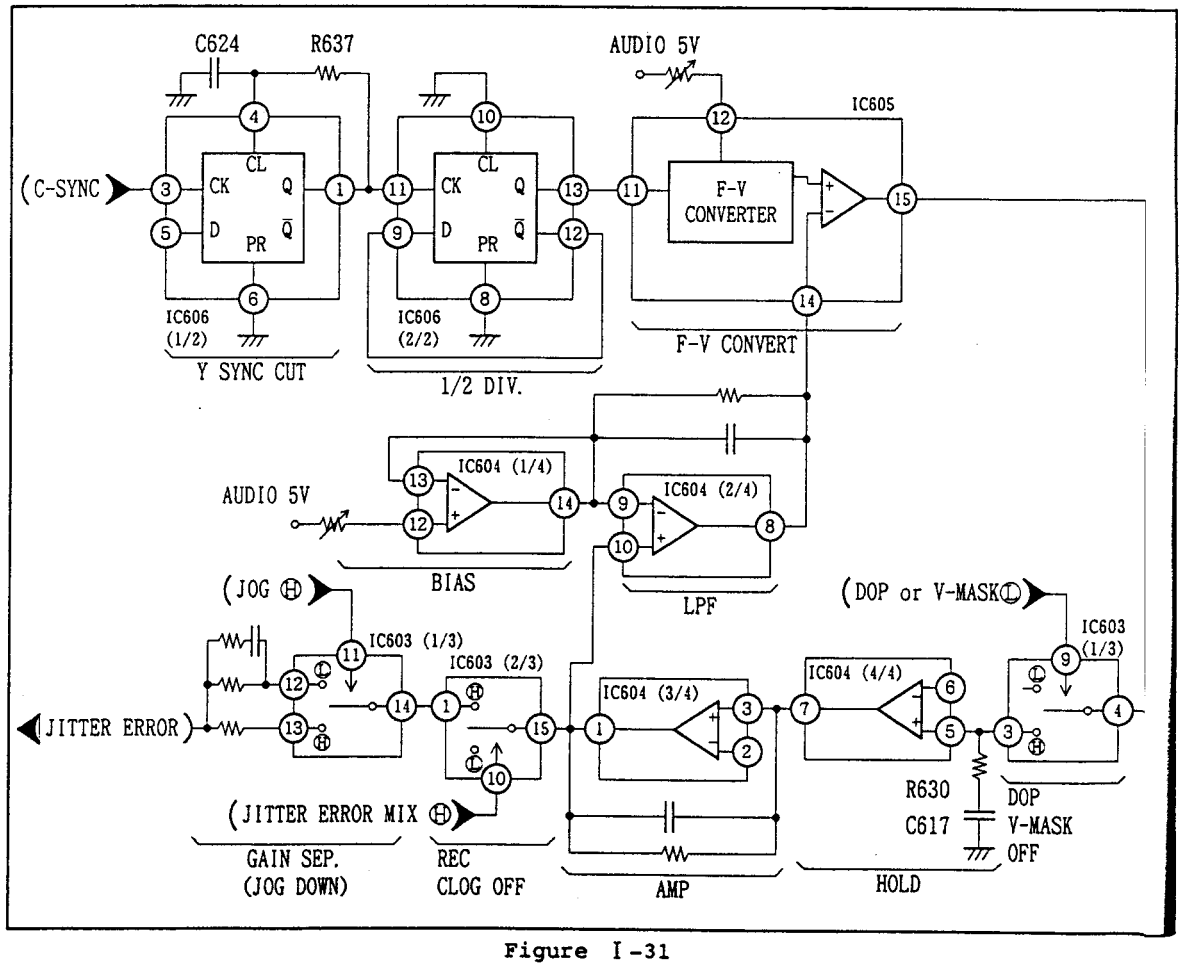


Figure I-31

(2) Capstan Motor Servo Circuit

Figure I-32 shows the path of the capstan motor error signal.

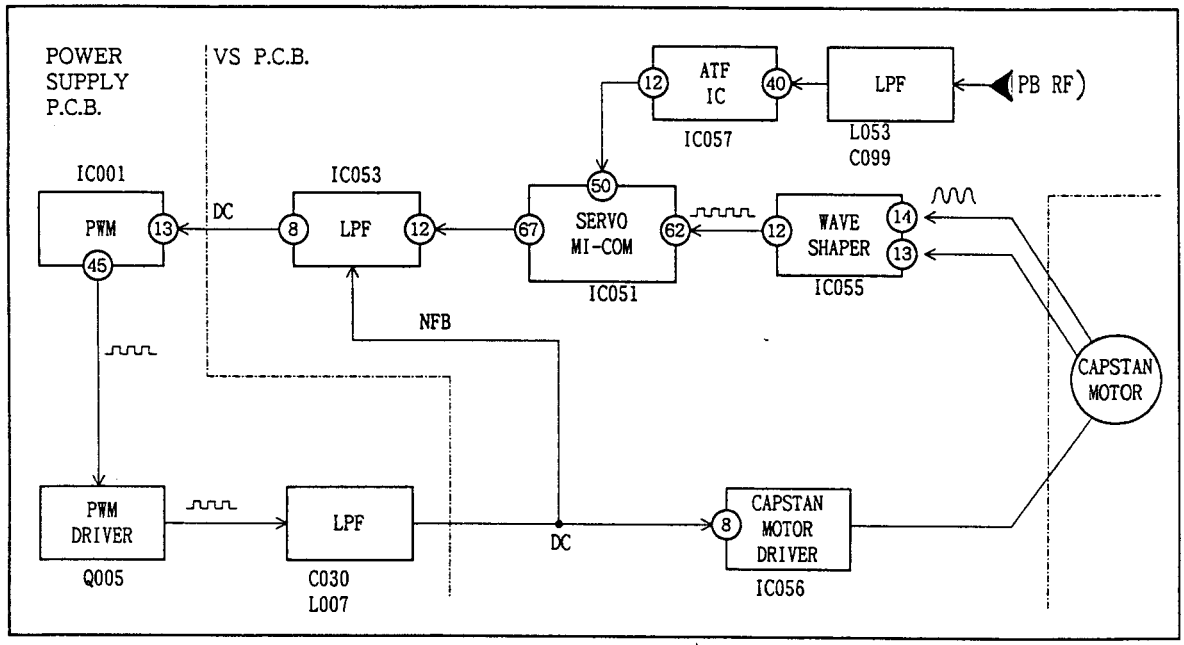


Figure I-32

3-2-5. Video Circuit

(1) Configuration

Figure I-33 shows the configuration of the video circuits.

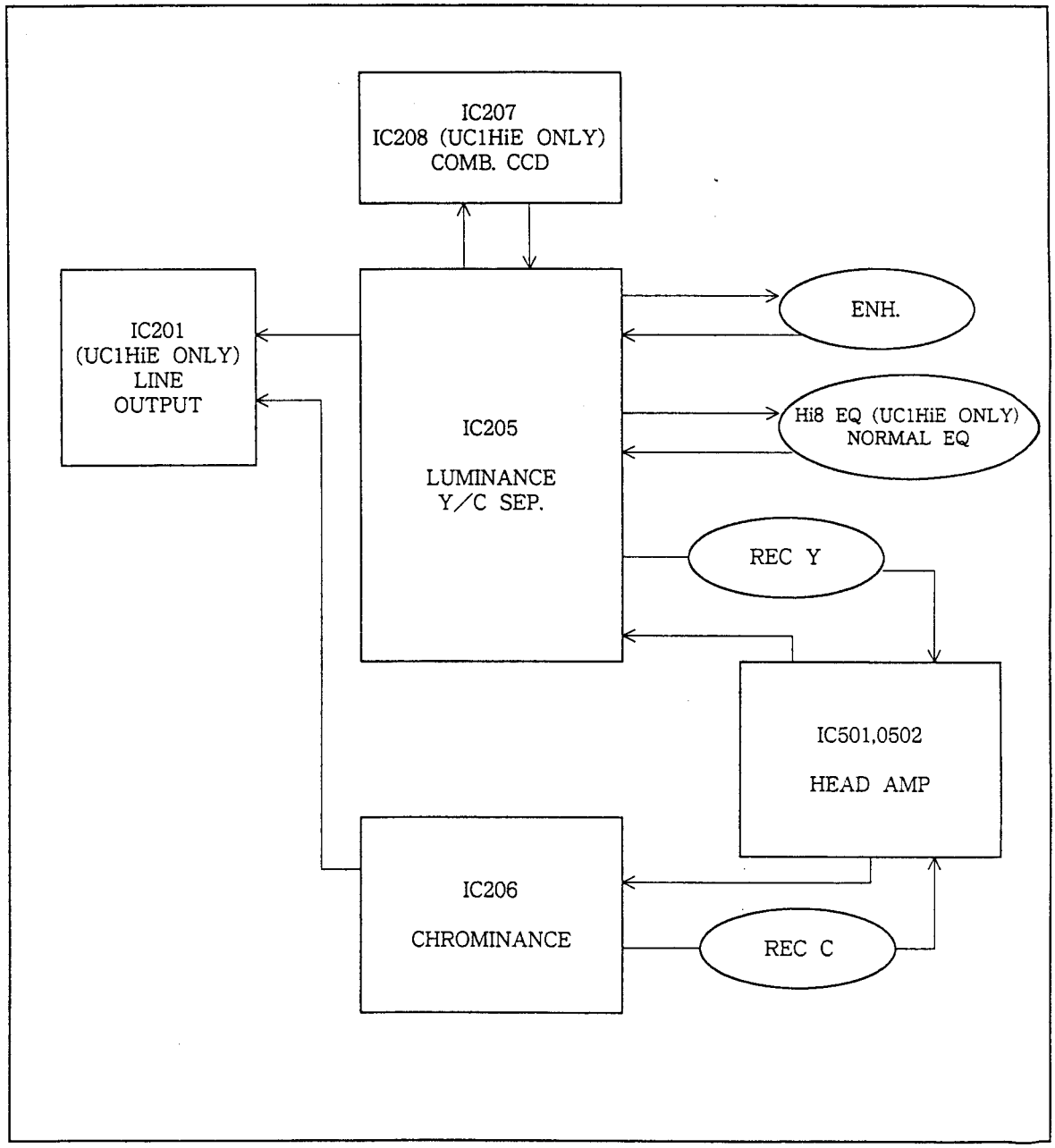


Figure I-33

(2) Activation and Deactivation of Video Circuit

For battery power saving, the video circuits are activated and deactivated frequently. Power to the video circuits is supplied mainly by the following three power circuits (described in 3-2-2):

- VIDEO 5 V ···· Outputs the VIDEO 5 V signal whenever the power is turned ON.
- EE 5 V ···· Supplies power mainly to the EE video circuits. Activated only in the EE mode. (UC1HiE ONLY)
- PB 5 V ···· Supplies power mainly to the PB video circuits. Activated only in the PB mode. Also turns OFF power to any unused ICs in any mode.

- IC 201 (UCS1A ONLY)
  IC 201 is a LINE OUT amplifier and need not be activated if no pin is connected to the LINE terminal. IC 201 is designed to be activated if any pin is connected to the LINE terminal.

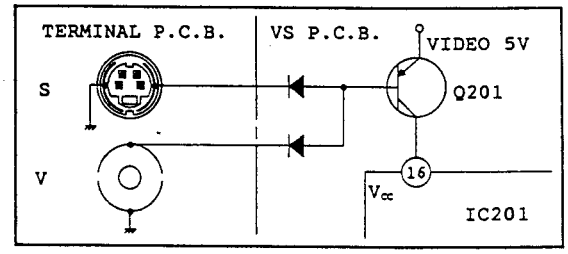


Figure I-34

- ICs 501 and 502
  ICs 501 and 502 are recording and playback head amplifiers. The recording amplifier is partially deactivated because it consumes much power. The playback amplifier is deactivated during recording when it is not needed.
  The recording amplifier can be deactivated by disconnecting power from Pin 45 (REC Vcc). The playback amplifier is activated and deactivated by the HA ON (L) signal (set to "H" when the recording amplifier is activated) from IC 051 (SERVO MI-COM).

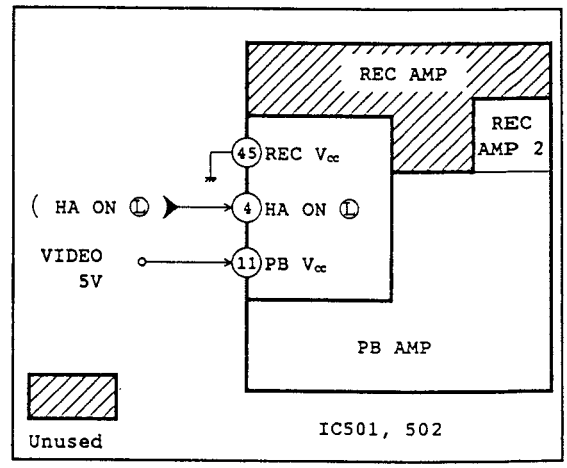


Figure I-35

3-2-6. Audio Circuit

The audio circuits accommodate a microphone with a variable directional angle and zoom interlock. The directional angle is varied by a directional angle variation signal from IC 608 (MAIN MI-COM) while zoom is interlocked by a zoom position (ZOOM ENC.) signal from the zoom encoder.

To reduce the space of the RCA-pin jack, the L channel terminal is designed to serve also as the monoral terminal. The audio circuits of the conventional models are configured as shown in Figure I-36 so that the monoral terminal may be independent of the RF unit. On the other hand, the UC1HiE's audio circuits are configured as shown in Figure I-37 so that the monoral signal may be output from the L channel terminal if no pin is connected to the R channel terminal.

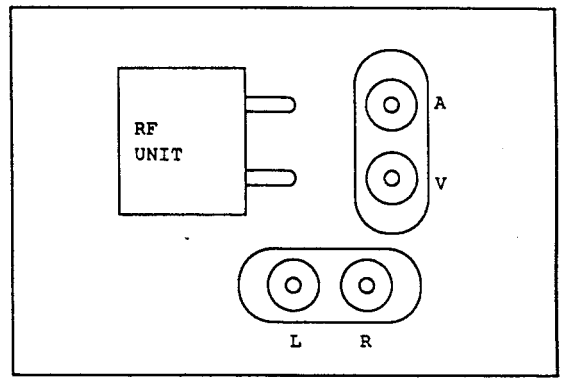


Figure I-36

If no pin is connected to the R channel terminal, the PIN DET (L) signal will be set to "H" while the L and R signal lines are short-circuited to convert the L signal line into the monoral (L + R) signal line.

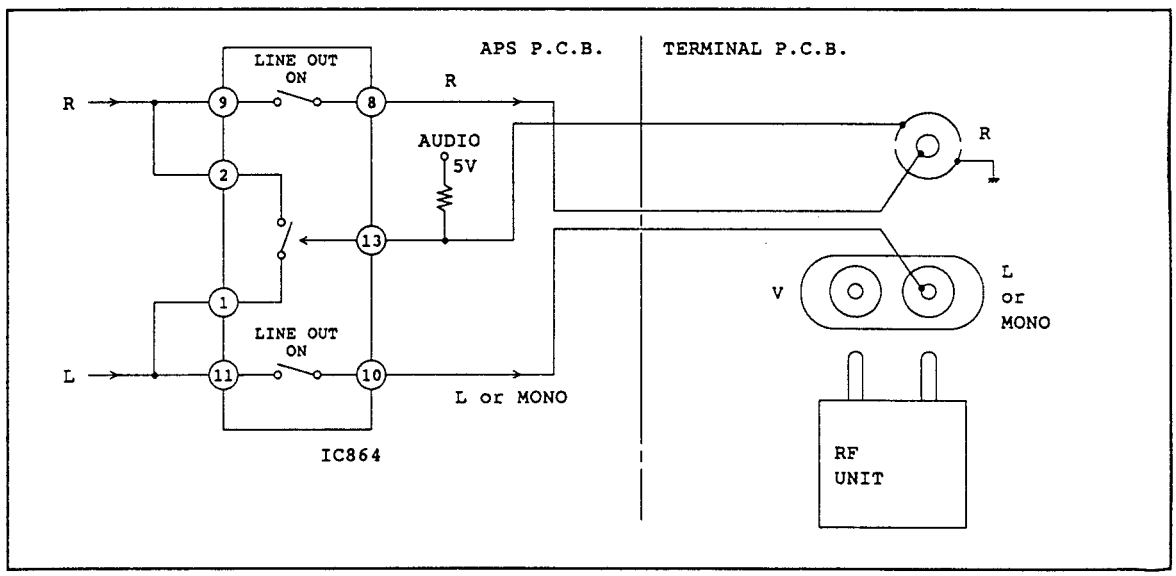


Figure I- 37

CONTENTS

Chapter II. DISASSEMBLING/ADJUSTMENTS

1. Before Disassembly and Electrical Adjustment

1-1. List of Tools and Supplies

Tools

Description	Tool No.	Remarks
Alignment tape E (monosco)	DY9 − 1062 − 000	
Y/C Separator	DY9 − 1093 − 500	
Alignment tape (V sweep)	DY9 − 1108 − 000	
Alignment tape (stereo)	DY9 − 1292 − 500	New
Extension cable	DY9 − 1130 − 000	New
Extension cable	DY9 − 1129 − 000	New
Extension connector	DY9 − 1188 − 000	New
Extension cable (× 2)	DY9 − 1270 − 000	
Extension connector (× 2)	DY9 − 1195 − 000	New
Extention cable	DY9 − 1281 − 000	New
Color bar chart	DY9 − 2002 − 000	
Gray scale chart	DY9 − 2005 − 000	
Color chart viewer(5600°K)	DY9 − 2039 − 500·220	Europe (except U.K.), HK, etc.
	DY9 − 2039 − 500·240	U.K. ONLY
Viewer lamp (5600°K)	DY9 − 2040 − 000	
CCA12 filter (46mm in diameter)	DY9 − 2046 − 000	
Character generator	DY9 − 1115 − 000	
Holder, Adjuster Ⅱ	DY9 − 2050 − 000	
Bit, Adjuster Ⅱ (0.9mm)	DY9 − 2050 − 001	
Bit, Adjuster Ⅱ (1.3mm)	DY9 − 2050 − 002	
Bit, Adjuster Ⅱ (1.8mm)	DY9 − 2050 − 003	
Bit, Adjuster Ⅱ (2.6mm)	DY9 − 2050 − 004	

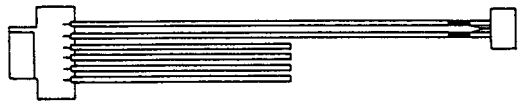
Supplies

Description	Tool No.	Remarks
Grease GE − X8	CY9 − 8044 − 000	
Teflon fluorocarbon Resin MP − 102	DY9 − 3013 − 000	
Diabond 1663	DY9 − 3008 − 000	
Froil G − 474B	DY9 − 3024 − 000	
Grease LT − SH	CY9 − 8033 − 000	
Froil G902	DY9 − 3017 − 000	
Grease GE − C9	CY9 − 8043 − 000	

Note: For mechanical adjustments of the recorder section, refer to the manual for the UC mechanical chassis (DY8 − 3391 − 504 201) separately issued.

1-2. List of Extension Cables

DY9 − 1281 − 000
(12 − PIN)



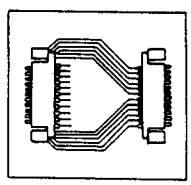
VS P.C.B. CN058↔SERVICE

DY9 − 1130 − 000
(28 − PIN)

VS P.C.B. CN054↔
POWER SUPPLY P.C.B. CN001

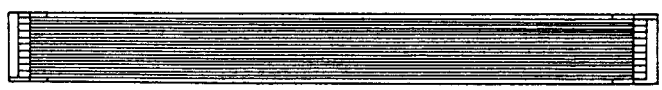
DY9 − 1129 − 000
(20 − PIN)

DY9 − 1188 − 000
(20 − PIN)



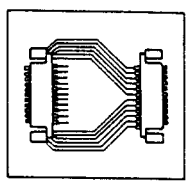
VS P.C.B. CN203↔
APS P.C.B. CN1003

DY9 − 1270 − 000 *Two cables must be used.
(24 − PIN)



VS P.C.B. CN057↔
APS P.C.B. CN601

DY9 − 1195 − 000 *Two cables must be used.
(24 − PIN)



VS P.C.B. CN059↔
APS P.C.B. CN602

Fig. Ⅱ-1

2. Disassembly

Note: If the replacement of screw is necessary, use the screw indicated in this manual as replacement.

2-1. Cover

2-1-1. Removal of lens food and finder

(1) Remove the lens hood.
(2) Slide the release switch to remove the finder.

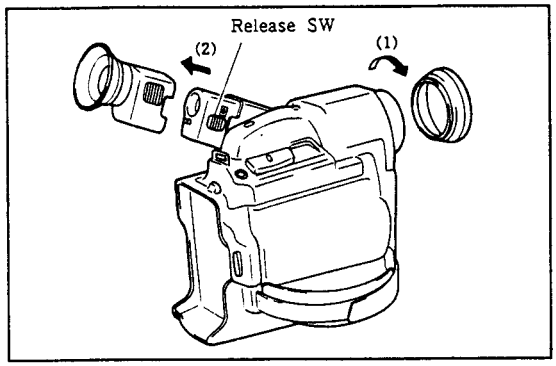


Fig. II-2

2-1-2. Removal of remote controller, cassette bar and cassette holder cover.

(1) Remove the remote controller.
(2) Slide the unlocking switch to open the cassette holder cover.
(3) Remove two screws ⓐ to demount the cassette cover.
(4) Remove six screws ⓑ to demount the cassette holder cover. (TWO screws on the bottom side are under the specification label.)

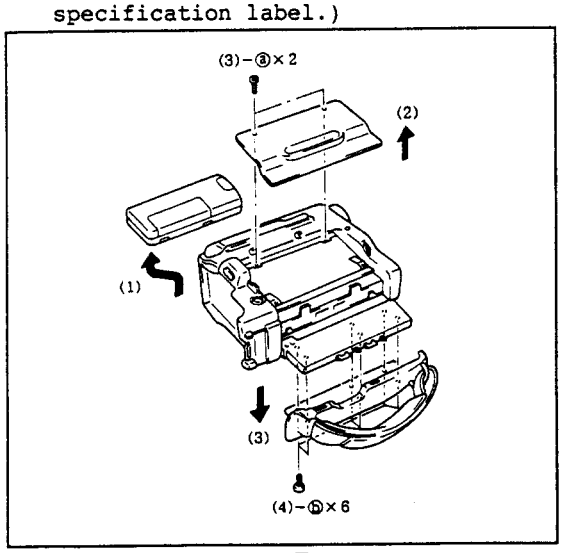


Fig. II-3

ⓐ M1.4 3.0mm
ⓑ M1.7 4.0mm (SELF TAP)
ⓒ M1.7 4.5mm (SELF TAP)
ⓓ M1.7 2.5mm
ⓔ M1.7 4.5mm
ⓕ M1.7 3.5mm
ⓖ M1.7 6.0mm

2-1-3. Rear cover

(1) Remove two screws ⓒs, one ⓓ, and two ⓔs.
(2) Slide the rear cover slightly to remove the connector.
(3) Demount the rear cover.

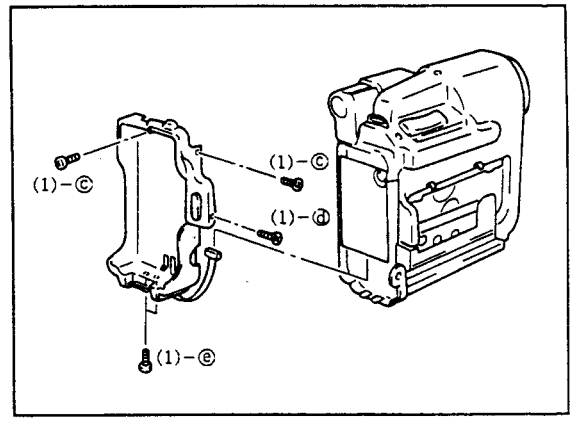


Fig. II-4

2-1-4. Right cover

(1) Erect the EVF.
(2) Remove one screw ⓑ, two ⓑs, one ⓕ and one ⓖ.
Note: Using wrong screws damage the P.C.B..
(3) Slide the base cover slightly to remove the connector CN603 and the extension connector.
(4) Remove the right cover.

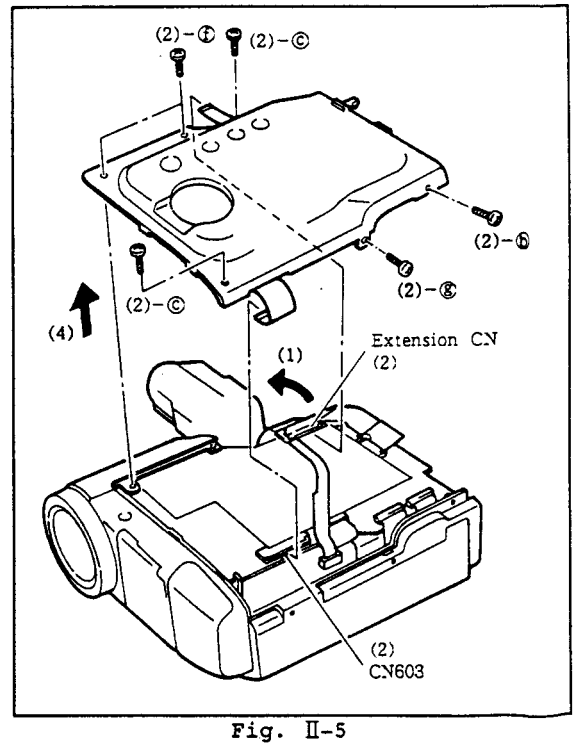


Fig. II-5

2-1-5. Top cover

(1) Remove the connector CN202.
(2) Remove one screw ⓕ and two ⓖs.
(3) Demount the start/stop switch.
(4) While caring not to scratch the flexible connector, demouunt the top cover.

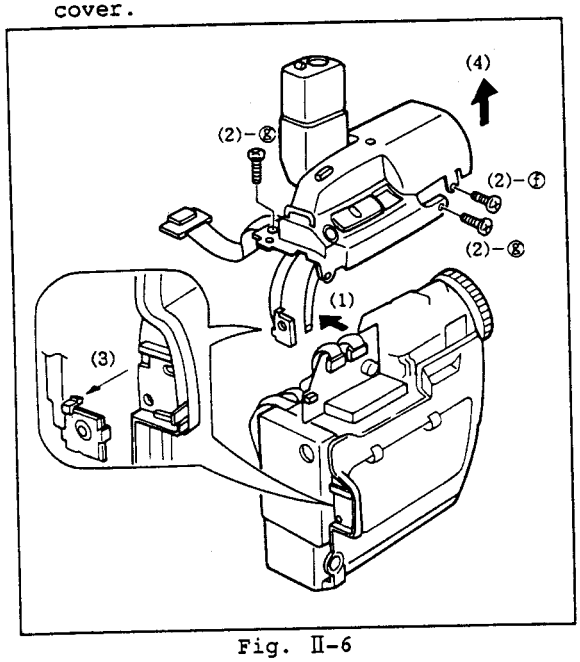


Fig. Ⅱ-6

2-1-6. Front cover

(1) Demount the AV terminal cover while shifting the hinge pin.
(2) Remove three screws ⓖ and one ⓕ (ref. fig. Ⅱ-8).
(3) Remove the connector CN801.
(4) Demount the front cover.
Note: Remove the microphone terminal first.

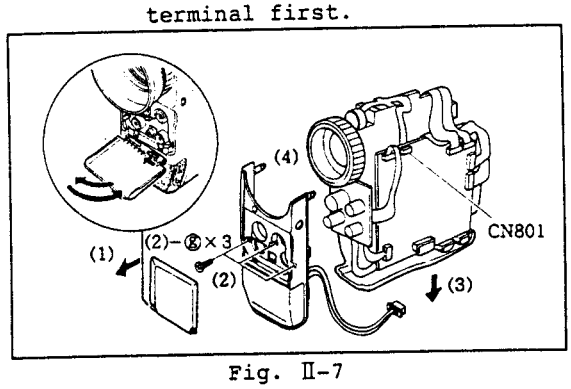


Fig. Ⅱ-7

ⓒM1.7 4.5mm(SELF TAP)
ⓕM1.7 3.5mm
ⓖM1.7 6.0mm

2-1-7. Left cover

(1) Demount the left cover giving attention to the three side clicks.

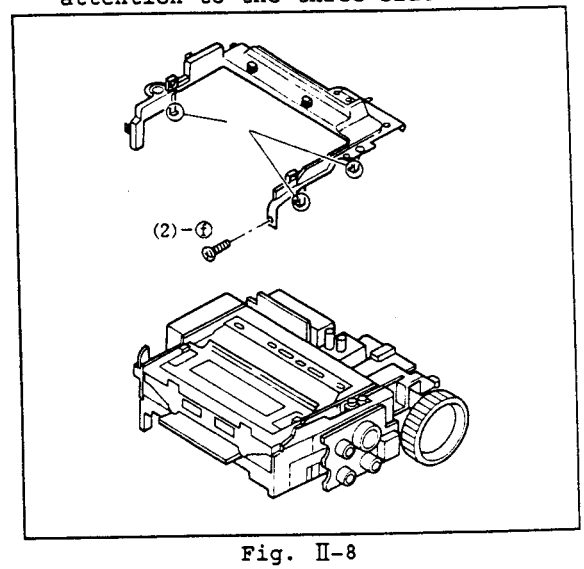


Fig. Ⅱ-8

2-1-8. Bottom cover

(1) Remove two screws ⓒ.
(2) Demount the bottom cover.

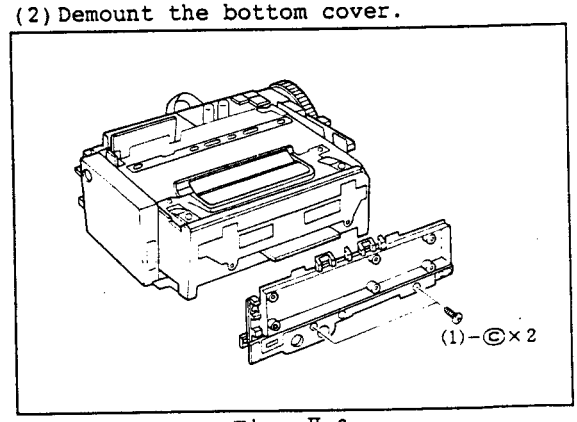


Fig. Ⅱ-9

2-1-9. Camera unit

(1) Remove the connectors CN901, 1501 and 1504.
(2) Remove two screws ⓒ.
(3) Demount the camera unit.

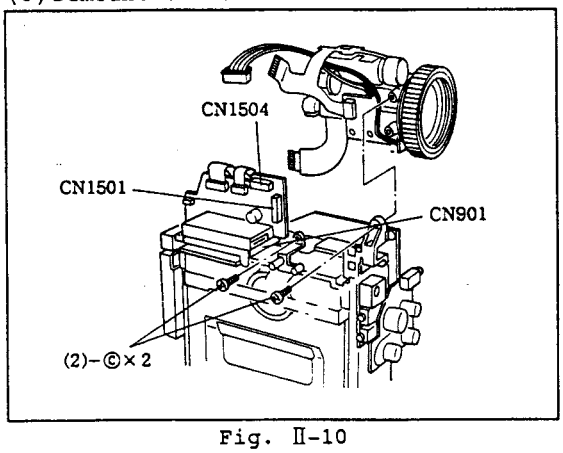


Fig. Ⅱ-10

2-2. Lens

2-2-1. CCD

(1) Remove two screws ⓒ.
(2) Remove the solder to demount the CCD (or CCD assembly).
(3) Demount the spacer.
(4) Demount the crystal filter.

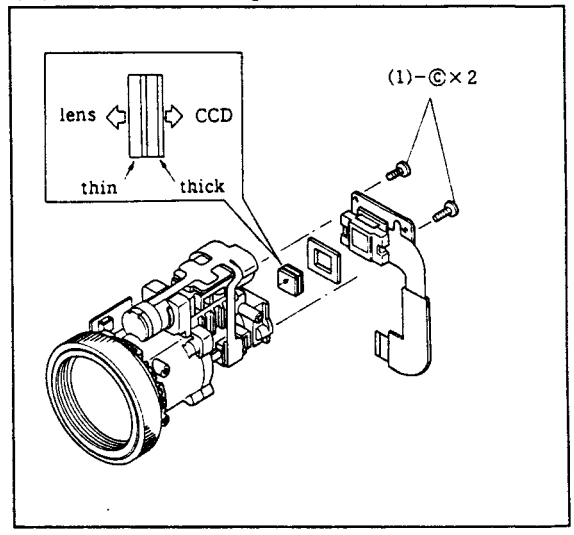


Fig. Ⅱ-11

2-2-2. Base plate and motor

(1) Remove the two connectors.
(2) Remove one screws ⓗ to demount the base plate for the zoom encoder.
(3) Remove the solder to demount the flexible connector.
(4) Remove two screws ⓗ to demount the PZ motor.
(5) Remove one ⓗ to demount the AF motor.

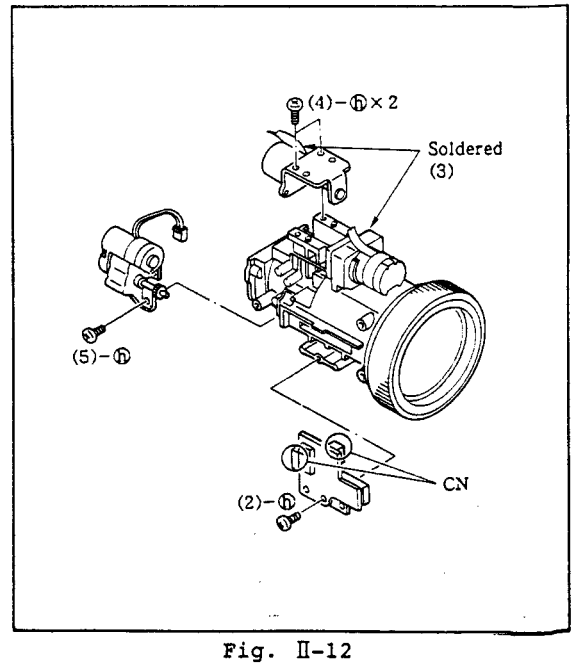


Fig. Ⅱ-12

ⓒ M1.7 4.5mm(SELF TAP)
ⓗ M1.7 4.5mm(SELF TAP)

2-2-3. IG meter

(1) Strip the rubber sheet.
Note: When reattaching the rubber sheet, reinforce its adhesion with such means as double coated adhesive tape.
(2) Remove two screws ⓘ.
(3) Demount the front lens assembly and the IG meter.
(4) Demount the zoom lens together with screw bar.
Note: Do not detach the screw bar from the zoom lens, which contains springs and ball pins.
(5) Demount the screw bar.

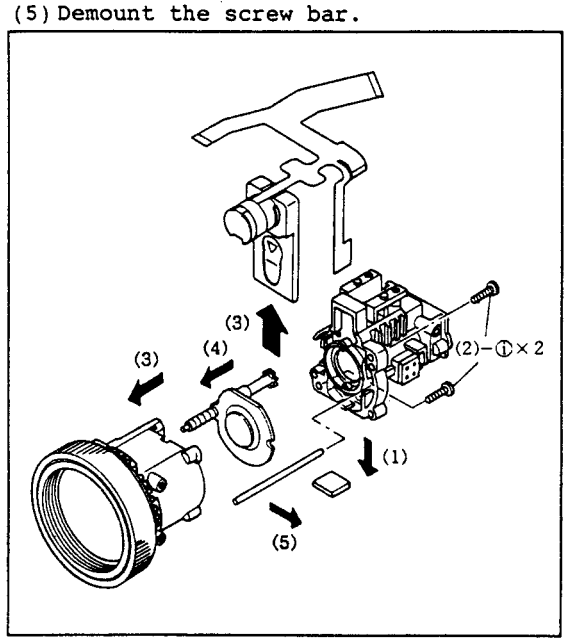


Fig. Ⅱ-13

2-2-4. Relay holder

(1) Demount the afocal mask by pulling it.
(2) Demount the two screw bars and the focus lens.

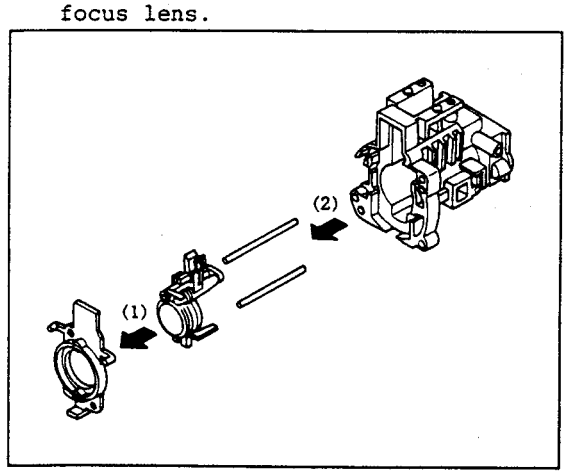


Fig. Ⅱ-14

2-2-5. Maintenance supplies

When cleaning or replacing individual parts, use the applies below in the sections shown in Figure Ⅱ-15.

Ⓐ Froil G－474B (DY9－3024－000)
Ⓑ Mixture of Grease GE－C9 (CY9－8043－000) and Grease GE－X8 (CY9－8044－000) in the proportion of 1:2 (by weight)
Ⓒ Mixture of Grease GE－C9 (CY9－8043－000) and Teflon fluoro-carbon Resin MP-102 (DY9－3013－000) in the proportion of 10:3 (by weight)
Ⓓ Froil G902 (DY9－3017－000)
Ⓔ Grease GE－C9 (CY9－8043－000)

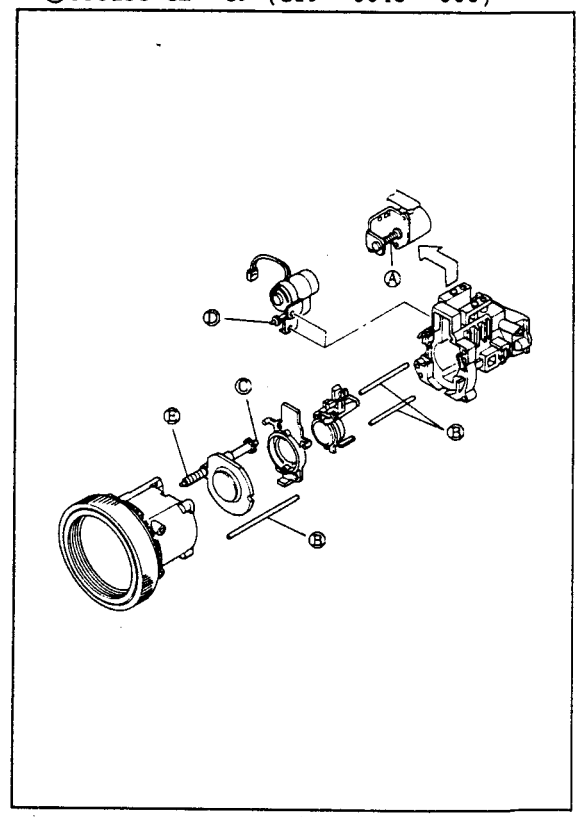


Fig. Ⅱ-15

ⓘ M1.7 8.0mm (SELF TAP)

2-3. P.C.B.s

2-3-1. AF and sensor modules

(1) Remove the connectors CN1001, CN1002, CN1004, and CN1005.
(2) Remove two screws ⓙ to demount the AF module.
(3) Remove two screws ⓒ to demount the sensor module.
(4) Remove one screw ⓙ to demount the PCB holder.

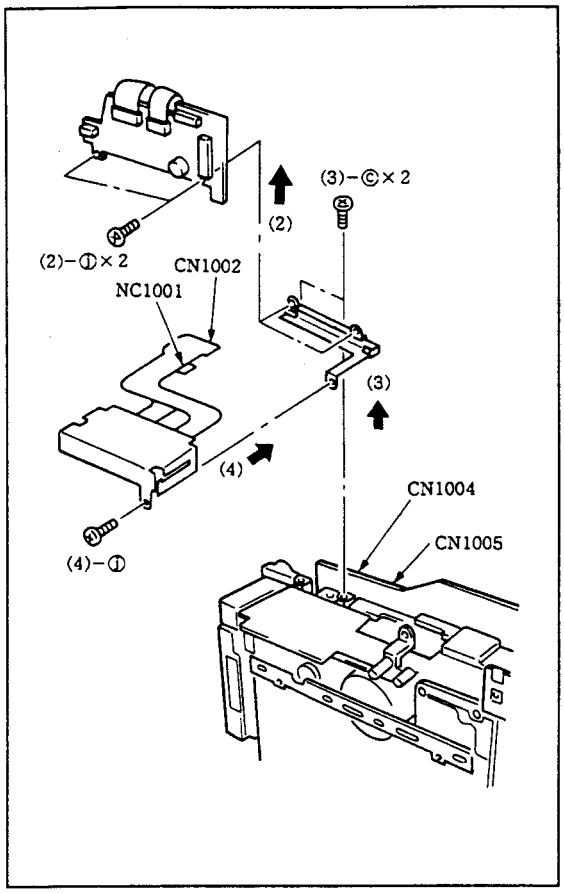


Fig. Ⅱ-16

2-3-2. APS, recorder, and Power Supply P.C.B.s

(1) Peel off the insulation sheet for the APS.
(2) Remove the connectors CN601, 602, 605, 802, 803, 804, and 1003.
(3) Remove two screws ⓚ to demount the APS P.C.B.
(4) Remove one screw ⓚ to demount the connector CN054, earth wire and then the PM module.
(5) Remove the insulation sheet and the solder (at two sections) to demount the Power Supply Module.
(6) Remove the connectors CN201, CN052, CN056, CN055, CN053, and CN051.
(7) Remove two screws ⓙ to demount the VS P.C.B.

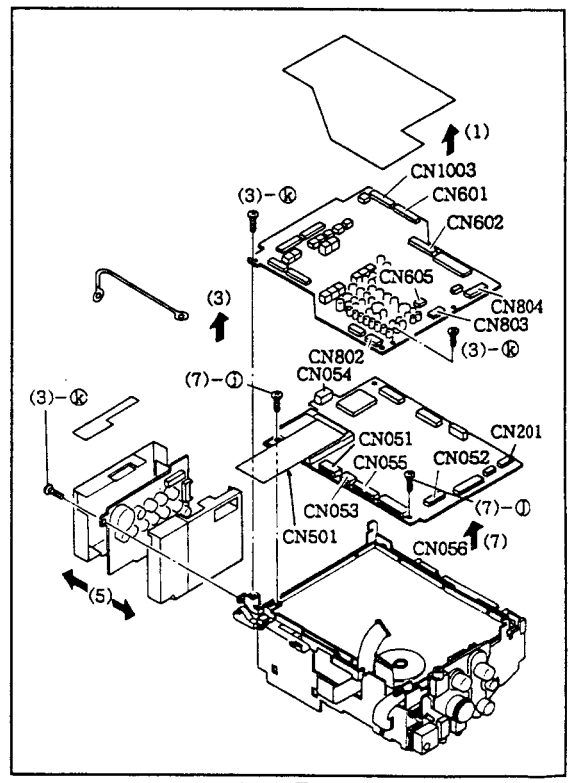


Fig. Ⅱ-17

ⓒM1.7 4.5mm(SELF TAP)
ⓙM1.7 3.0mm
ⓚM1.7 2.0mm

2-3-3. Terminal and Headphone P.C.B.s

(1) Remove one screw ⓒ to demount the earth wire and then the Terminal P.C.B.
(2) Remove one screw ⓒ to demount the Headphone P.C.B.

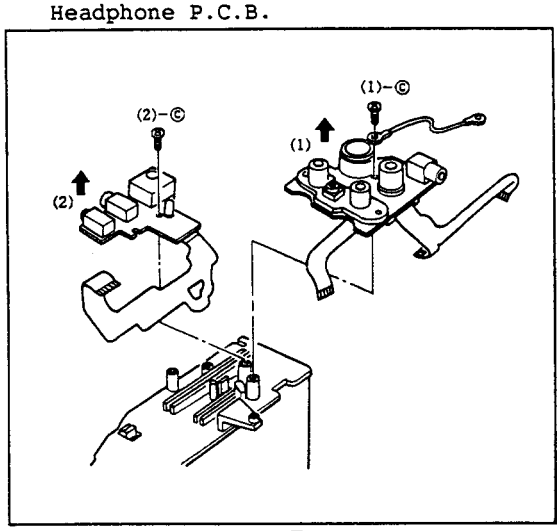


Fig. Ⅱ-18

2-3-4. Recorder holder

(1) Remove three screws ① to demount the recorder holder.
(2) Remove four screws ⓜ to demount the supports VS and then A and B.
(3) Remove two screws ⓜ to demount the reinforcement plate for the recorder.

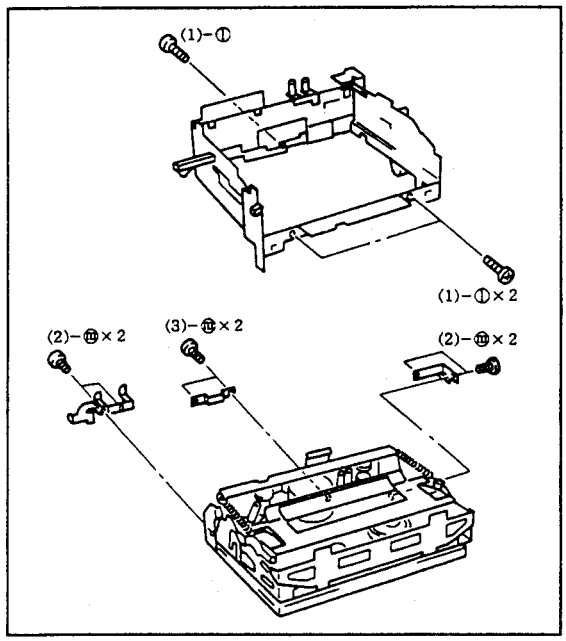


Fig. Ⅱ-19

ⓒ M1.7 4.5mm(SELF TAP)
① M1.4 4.5mm
ⓜ M1.4 2.5mm
ⓝ M1.7 3.5mm
ⓞ M1.7 5.0mm(SELF TAP)

2-4. Finder

2-4-1. Switches

(1) Remove one screw ⓜ to demount the strap fixture.
(2) Remove eight screws ⓜ to demount the KEY - 2 Unit.
(3) Demount the power zoom button.
(4) Remove one screw ⓜ to demount the EVF.
(5) Remove two screws ⓝ to demount the rotating rubber, EVF retainer plate, and ball spring.
Note: Refer to the instruction of supplies(P. Ⅱ-22) at the time of reassembly.

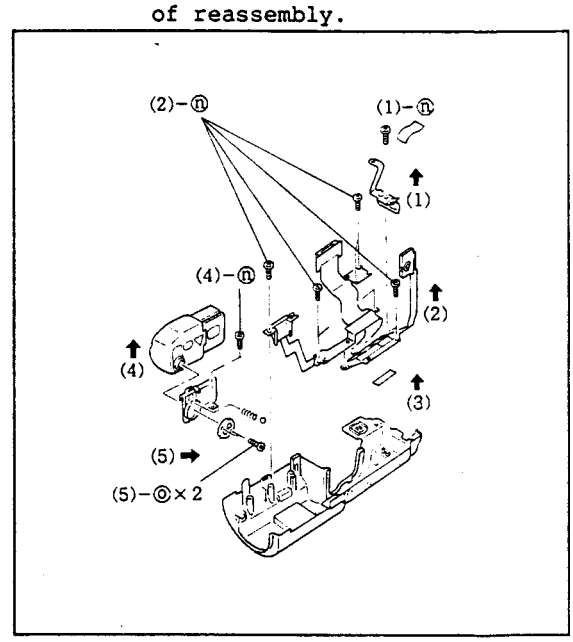


Fig. Ⅱ-20

2-4-2. EVF

(1) Remove two screws ⓞ to demount the EVF cover (with four clicks).
(2) Demount the EVF (with one click).

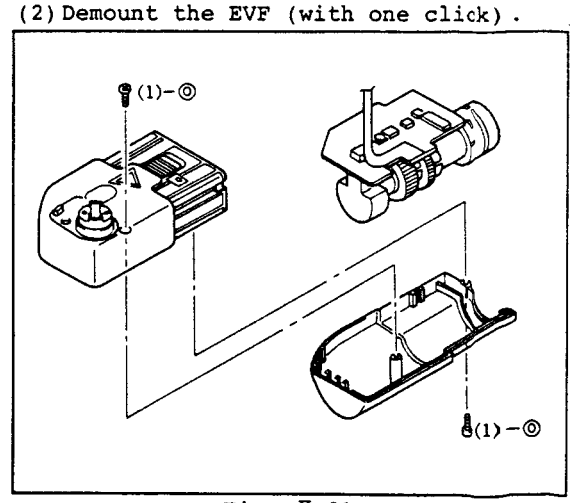


Fig. Ⅱ-21

2-4-3. Instruction of supplies application

When reassembling individual parts, use the supplies below in the sections shown in Figure Ⅱ- 20.

Ⓐ:Diabond 1663 (DY9 - 3008 - 000)
Ⓑ:Grease LH - SH (CY9 - 8033 - 000)

Note: Take care not to bring Diabond 1663 in contact with the movable parts.

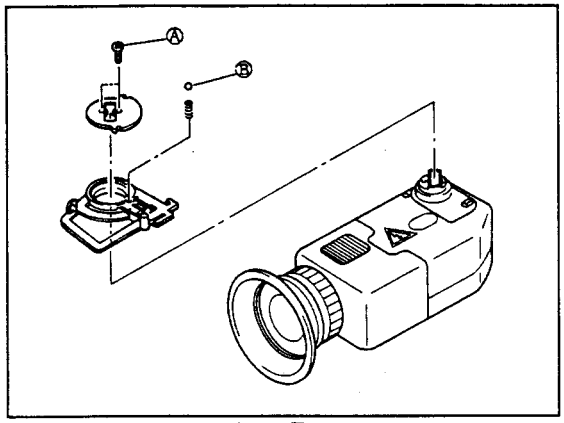


Fig. Ⅱ-22

2-5. Power section

Precautions in Handling Lithium Battery

1. Perform soldering with the tip of the soldering iron heated at the temperatures of 350℃ within 5 seconds. (or 260℃ 10 seconds)

WARNING:
The battery used in this device may prevent a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 212°F (100℃) or incinerate. Replace battery with SANYO ML2016 - HZ2 (Part number: DH9 - 0554 - 000). Use of another battery may prevent a risk of fire or explosion.

2-5-1. Fuse Battery P.C.B.

(1) Peel off the tape fixing the wire connector.
(2) Remove one screw ⓑ to demount the Fuse Battery cover.
(3) Demount the wire connector.
(4) Remove the screw Ⓟ to demount the Fuse Battery P.C.B.

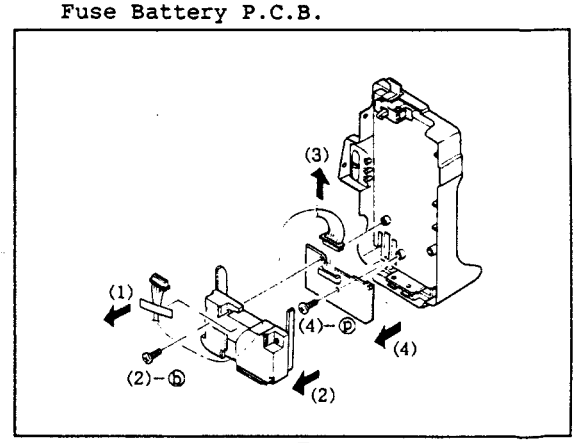


Fig. Ⅱ-23

ⓑ M1.7 4.0mm(SELF TAP)
Ⓟ M1.7 3.0mm(SELF TAP)

2-6. List of external screws

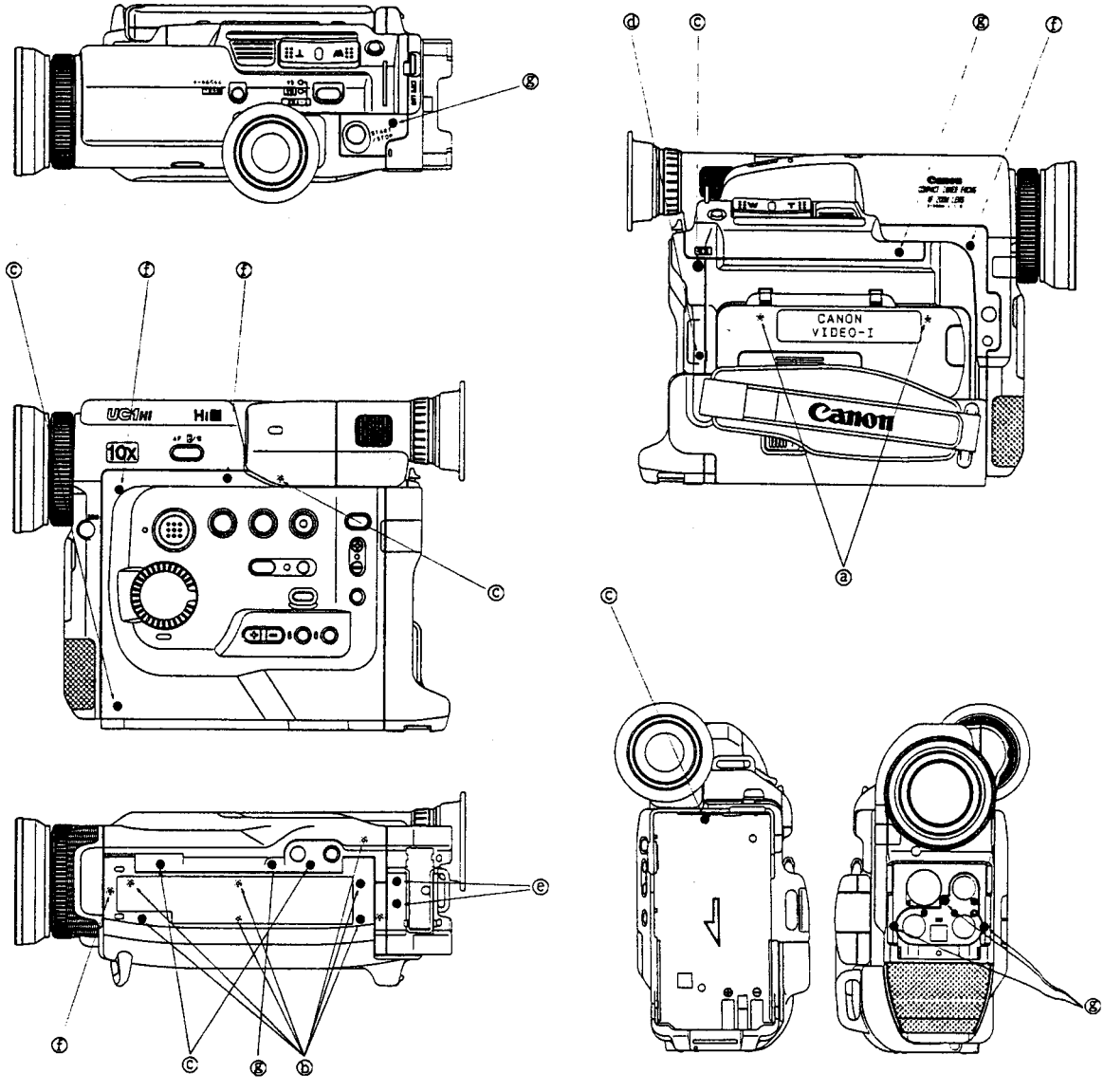


Fig. II-24

	PART No.	size	
ⓐ	XA1-7140-309	M1.4	3.0mm
ⓑ	XA4-9170-409	M1.7	4.0mm (SELF TAP)
ⓒ	XA4-9170-459	M1.7	4.5mm (SELF TAP)
ⓓ	XA1-1170-259	M1.7	2.5mm
ⓔ	XA1-7170-459	M1.7	4.5mm
ⓕ	XA1-7170-359	M1.7	3.5mm
ⓖ	XA4-9170-609	M1.7	6.0mm (SELF TAP)

3. Preparation for Electrical Adjustment

3-1. AF and Camera Sections

(1) Necessary Tools and Appliances
- Constant-voltage (6V) supplier or power coupler (DC－100)
- Extension cable

(2) Procedure
①Demount the right cover (without removing its two connectors).
②When adjusting the AF section, demount the top cover, too.
③Supply the battery armature with 6V from the constant-voltage power source or power coupler.

(3) Purpose
To make electrical adjustments of AF and camera sections on the tripod.

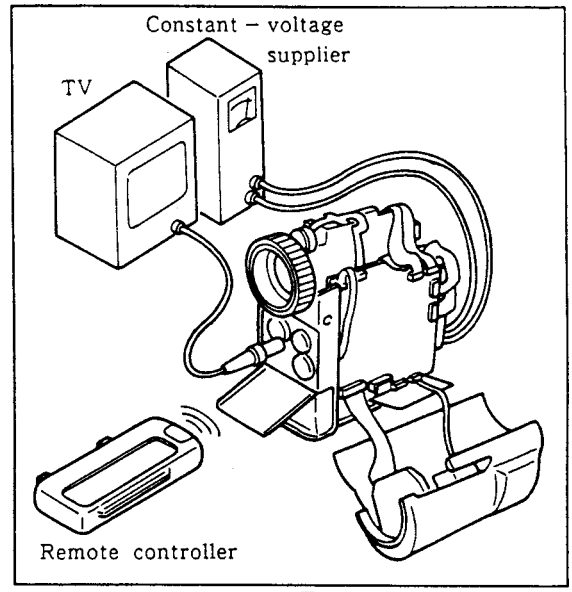


Fig. Ⅱ-25

(4) Other precautions
①Energize the AF and camera sections before making electrical adjustment (for 3 minutes or more)
②Use a light box with a color temperature of 5600°K.
③Notes on a standard angle of view.
- A standard angle of view equals to a full chart area shot by a full-scan monitor.
- When checking a gray scale chart or color bar chart with an oscilloscope, set a standard angle of view by setting the gray scale to 36μS and color bars to 52μS.
- When checking any other chart, set a standard angle of view by aligning its center with that of the standard angle of view set on a gray scale chart or color bar chart.
- Unless otherwise specified, shoot chart from the distance of about 1.4m.

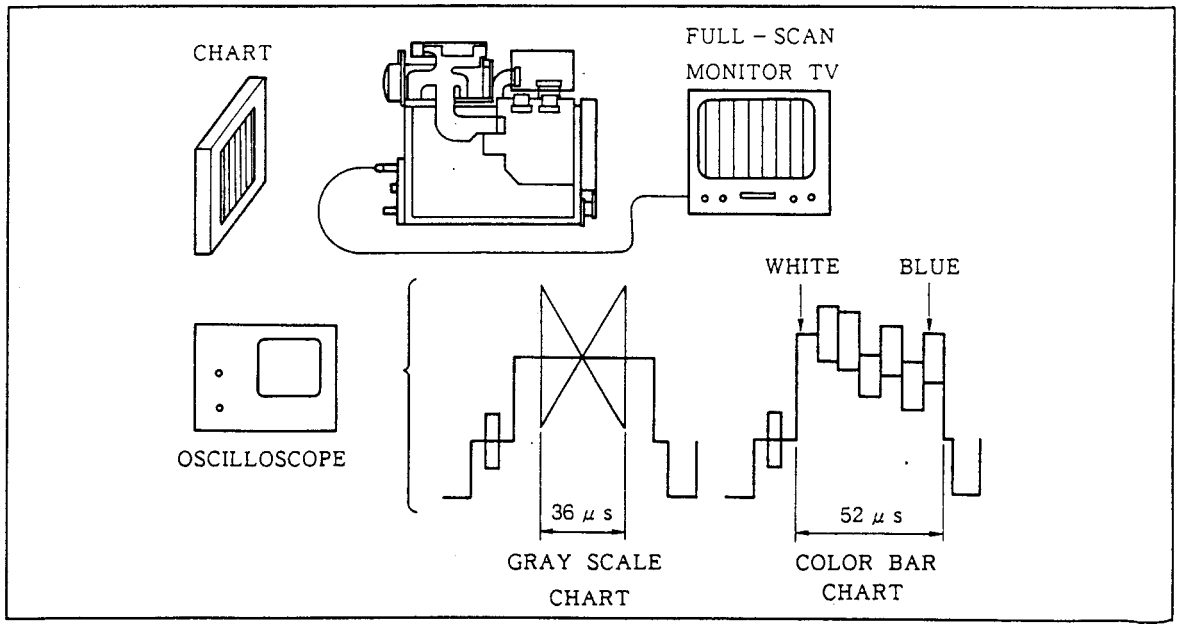


Fig. Ⅱ-26

3-2. Power Section (Power Supply PCB)

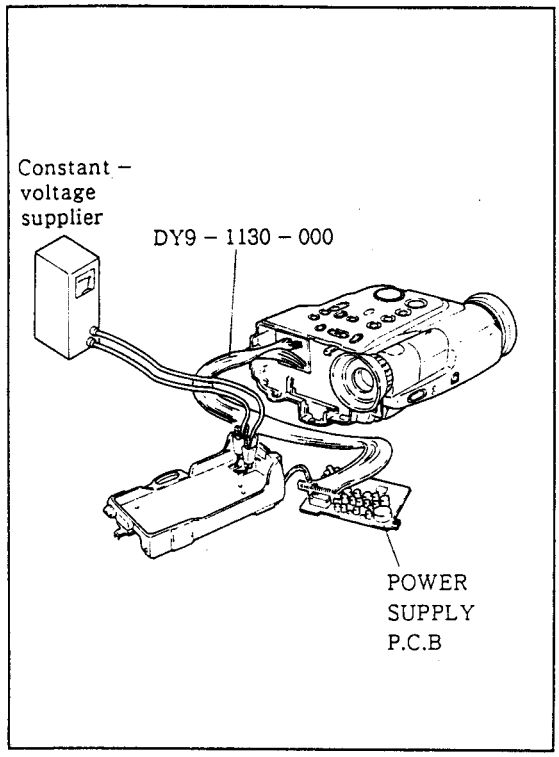


Fig. II-27

3-3. System Control and Audio Sections (APS PCB)

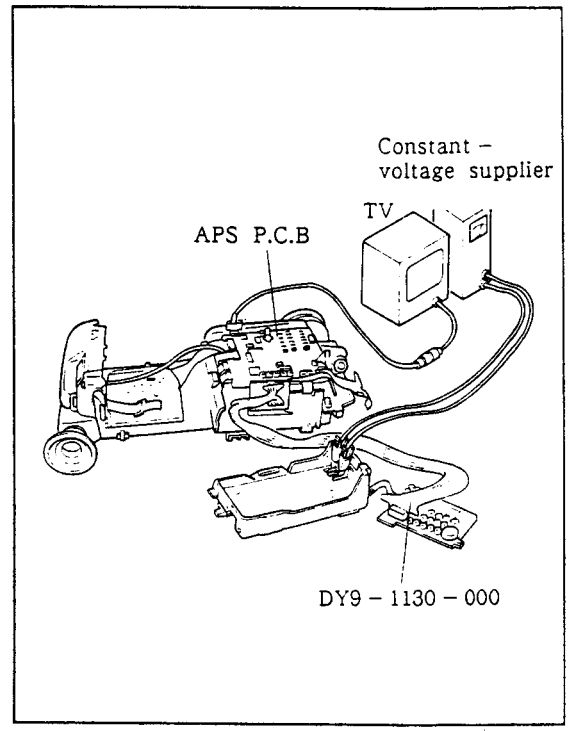


Fig. II-28

3-4. Servo and Video Sections (VS PCB)

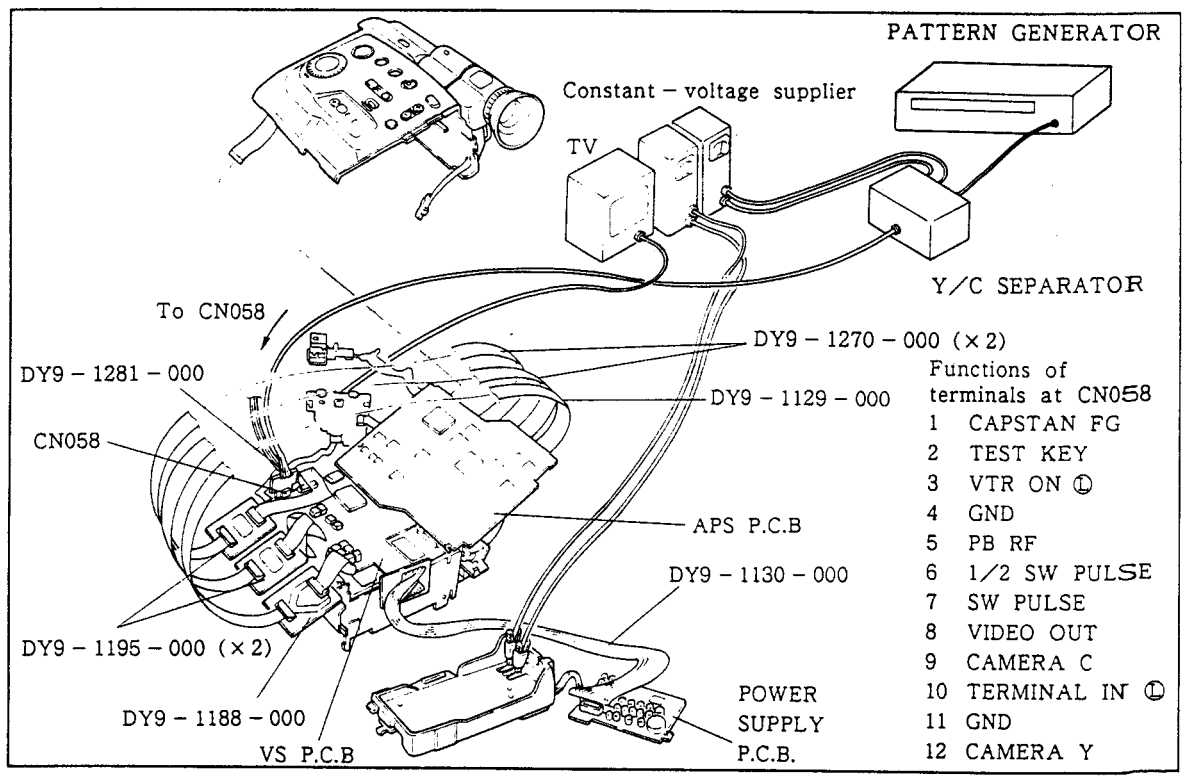


Fig. II-29

4. How to Check P.C.B.s

4-1. APS PCB

Check the APS PCB in the same manner as the Servo and Video sections (see the previous page).

4-2. VS PCB

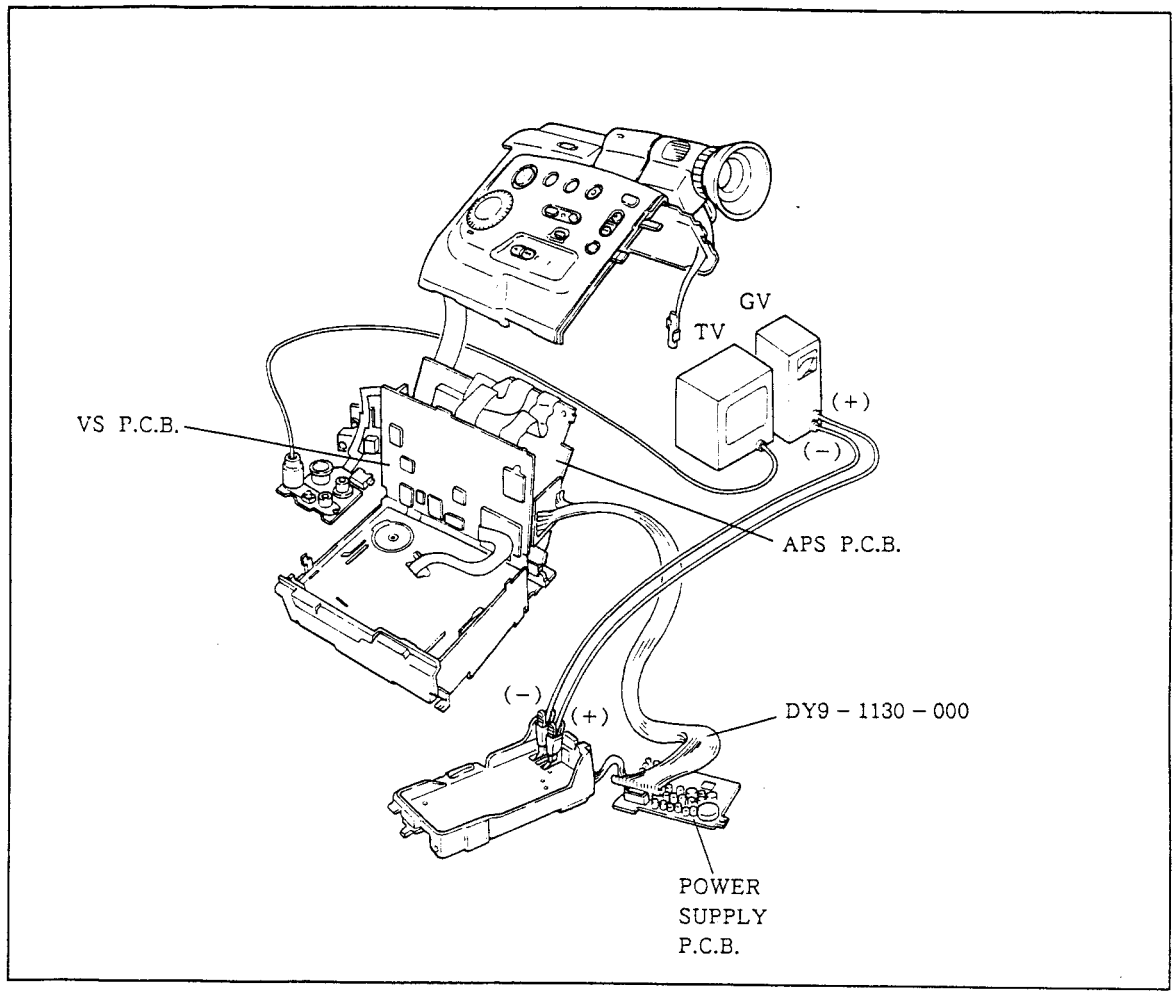


Fig. II-30

5. Service Modes

5-1. How to Set Service Modes

The normal mode can be switched to the service modes (SERV 1 to SERV 6) by short-circuiting the patterns of the remote controllers. The positions to be short-circuited are also shown in Figure Ⅱ-31. (The remote controller WL-1 also has patterns but no hole in its outer casing. Therefore, use the conventional remote controller specified in Figure Ⅱ-31.)

The remote controllers are classified as service parts.

Example) WL－600 (DY2－1294－000)

Switching between the normal mode and service modes or among the service modes occurs each time the Service Mode key is pressed. (Figure Ⅱ-32)

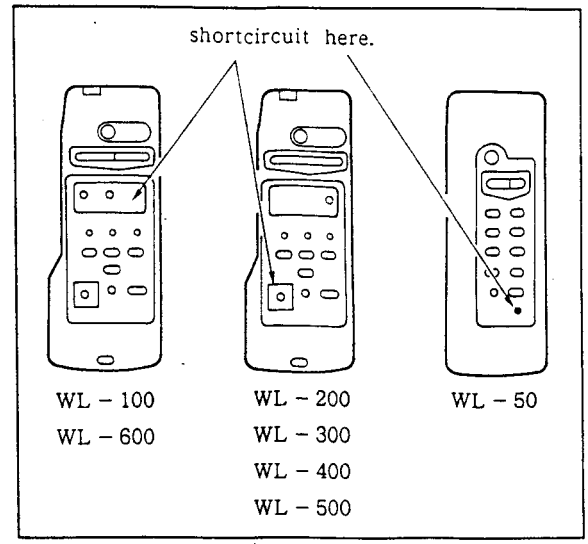


Fig. Ⅱ-31

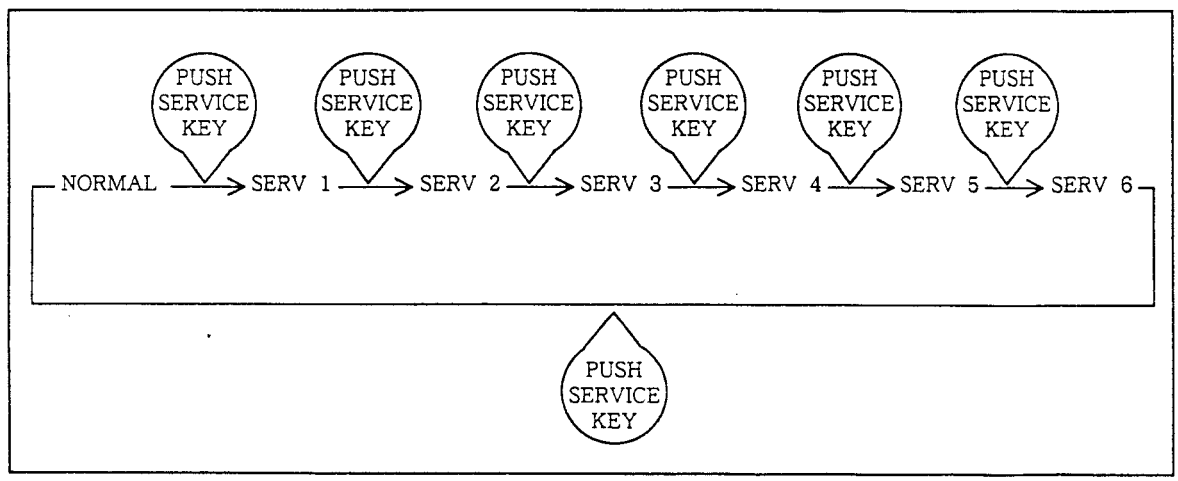


Fig. Ⅱ-32

5-2. Service Mode 1 (SERV 1)

:Mode for setting reference voltage of insufficient power.

①Press the Service Mode key once to display the SERV 1 Screen.
②Supply 5.65V for the BATT terminal.
③Load a cassette tape and set the REC PAUSE mode.
④Press the REC key.

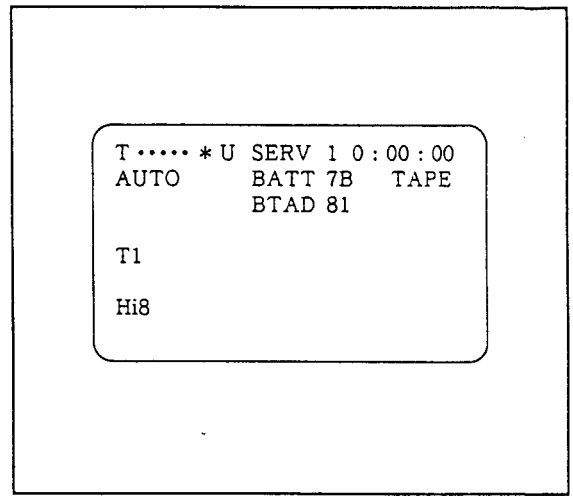


Fig. II-33

5-3. Service Mode 2 (SERV 2)

:Mode for inspection in plant.

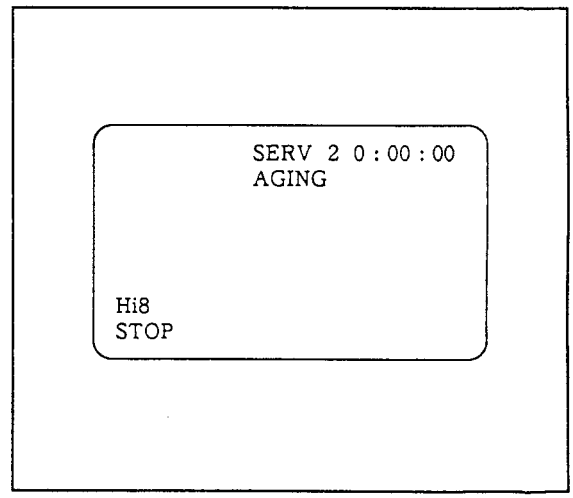


Fig. II-34

5-4. Service Mode 3 (SERV 3)

:Mode for tape transport adjustment.

①Press the Service Mode key three times to display the SERV 3 Screen. (On the SERV 3 Screen, press the Service Mode key once.) Confirm that 75% off-track and shifted switch pulse duty cycle are set.
↓ Press the C. RESET.
②Confirm that 100% on-track and shifted switch pulse duty cycle are set.
↓ Press the C. RESET.
③Confirm that 100% on-track and normal switch pulse duty cycle are set.

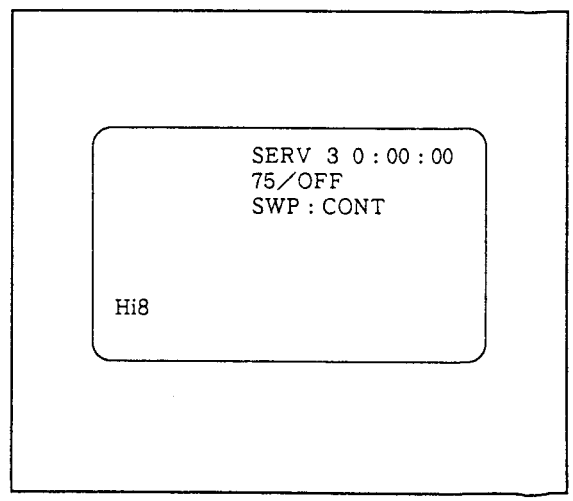


Fig. II-35

5-5. Service Mode 4 (SERV 4)

:Mode for adjustment of E²PROM data at computer. (Adjustments must be made by using a wireless remote controller.)
Data revisable from B740 to B76G by specifying an address corresponding to a desired adjustment item.

①Method of Setting and Adjusting Data
To set or adjust data in the E²PROM, operate keys on a remote controller as follows:

· PLAY [▶] :
Reference address shift key(1)
Each time this key is pressed, reference address is proceeded as follows.

┌→B700→B704→B708→B70C→·····B7F8→B7FC┐

· STOP [■] :
Reference address shift key (2)
Each time this key is pressed, reference address is receded as follows.

┌→B700→B7FC→B7F8→B7F4·····B708→B704┐

· STILL [▶◀] :
Data selection key
Each time this key is pressed, the arrow will move downward to select data.

· FF [▶▶] /REW [◀◀] :
Data setting keys
These keys are used to set data. Each time the FF key is pressed, data will change in the positive direction. Each time the REW key is pressed, data will change in the negative direction.

· REC [●] :Data writing key
Each time this key is pressed, selected data will be stored in the E²PROM built into the camera microcomputer.

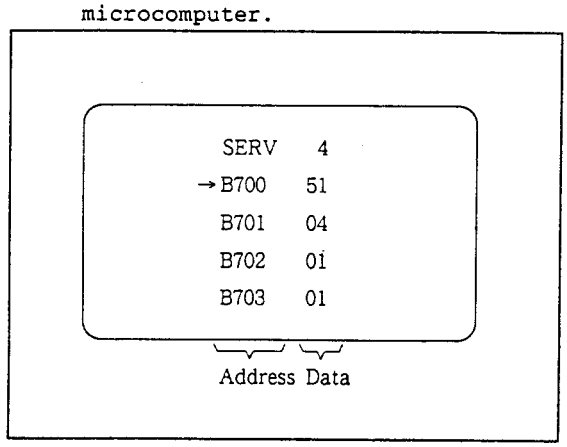


Fig. Ⅱ-36

Address	Data name	Data
B740	V_{SUB} adjustment	Adjustment value
B741	Iris encoder	Auto adjustment
B744	Automatic iris	Adjustment value
B745	Automatic gain control (AGC) adjustment	Adjustment value
B746	Y1 gain control	Adjustment value
B747	Y2 gain control	Adjustment value
B748	SYNC level adjustment	Adjustment value
B749	Setup level adjustment	Adjustment value
B74A	White clip adjustment	Adjustment value
B74B	Y level adjustment	Adjustment value
B74E	Black adjustment	Adjustment value
B750	Burst level adjustment	Adjustment value
B751	C1 Gain adjustment	Adjustment value
B752	C level adjustment	Adjustment value
B754	Carrier balance R − Y adjustment	Adjustment value
B755	Carrier balance B − Y adjustment	Adjustment value
B756	R gain adjustment	Adjustment value
B757	B gain adjustment	Adjustment value
B758	R − Y gain adjustment	Adjustment value
B759	B − Y gain adjustment	Adjustment value
B75A	R − Y hue adjustment	Adjustment value
B75B	B − Y hue adjustment	Adjustment value
B75C	3200°K R contrast adjustment	Adjustment value
B75D	3200°K B contrast adjustment	Adjustment value
B760	5600°K R contrast adjustment	Adjustment value
B761	5600°K B contrast adjustment	Adjustment value
B764	5600°K white balance set adjustment	Auto. Adjustment
B766	3200°K white balance reference adjustment	Auto. Adjustment
B767	5600°K white balance reference adjustment	Auto. Adjustment

Action in Camera Microcomputer in Adjusting EVR

Item	Specified address	Writing address	Changed D/A channel	Action
VSUB	B740	B740	DA1 – 8	Action 1: Forced opening of the iris. Action 2: Outputting CCD OUT to TP1011. Action 3: Outputting data received through serial communications from D/A channels. Action 4: Detecting a storage request flag and storing data at a specified address.
IRIS ENC	B741	B742 B743	DA3 – 3 DA3 – 4	Action 5: Detecting a storage request flag, performing arithmetic, and storing its result at a specified address. * Automatically opening and closing the iris before performing arithmetic.
IRIS ENC (GAIN)	B742	B742	DA3 – 3	Action 3 and Action 4 (in manual adjustment) * Manual adjustment is unnecessary when automatic adjustment is made at B741.
IRIS ENC (OFFSET)	B743	B743	DA3 – 4	Action 3 and Action 4 (in manual adjustment) * Manual adjustment is unnecessary when automatic adjustment is made at B741.
IRIS SET	B744	B744	DA3 – 2	Action 2, Action 3, and Action 4
AGC SET	B745	B745 B7BF	DA3 – 1	Action 3, Action 4, and Action 5
Y1 GAIN	B746	B746	DA1 – 11	Action 3 and Action 4
Y2 GAIN	B747	B747	DA1 – 12	Action 3 and Action 4
SYNC	B748	B748	DA3 – 8	Action 3 and Action 4
SET UP	B749	B749	DA3 – 7	Action 3 and Action 4
W CLIP	B74A	B74A	DA3 – 10	Action 3 and Action 4
Y LEVEL	B74B	B74B	DA3 – 6	Action 3 and Action 4
BLACK	B74E	B7BD B7E0 B7E1 B7E2	– – –	Action 6: Forced closing of the iris. Action 5
BURST	B750	B750	DA3 – 9	Action 3 and Action 4
C1 GAIN	B751	B751	DA1 – 1	Action 3 and Action 4
C LEVEL	B752	B752	DA1 – 3	Action 3 and Action 4
R-Y CARR	B754	B754	DA3 – 11	Action 3 and Action 4
B-Y CARR	B755	B755	DA3 – 12	Action 3 and Action 4
R GAINB	B756B757	B756B757	DA1 –	Action 3 and Action 4Action 3 and Action 4
GAIN			4DA1 – 2	* Centering a 5600°K white dot repeatedly at B756 and B757.
R – Y GAIN	B758	B758	DA1 – 6	Action 3 and Action 4
B – Y GAIN	B759	B759	DA1 – 5	Action 3 and Action 4
R – Y HUE	B75A	B75A	DA1 – 9	Action 3 and Action 4
B – Y HUE	B75B	B75B	DA1 – 10	Action 3 and Action 4
WB Rcontl	B75C	B75C	DA2 – 4	Action 3 and Action 4

Item	Specified address	Writing address	Changed D/A channel	Action
WB Bcontl	B75D	B75D	DA2 – 5	Action 3 and Action 4 * Centering a 5600°K + CCA12 white dot repeatedly at B756 and B757.
WB Rcont2	B760	B760 B720	DA2 – 4	Action 3, Action 4, and Action 5
WB Bcont2	B761	B761 B721	DA2 – 5	Action 3, Action 4, and Action 5 * Centering a 5600°K white dot repeatedly at B760 and B761.
WB SET	B764	B726 B727	– – –	Action 5 * WB SET gate pulse output
WB WARM	B766	B722 B723 B710 B711 B712 B713 B714 B715 B716 B717	– – –	Action 5 * Shooting a 5600°K + CCA12 white dot.
WB COLD	B767	B724 B725 B718 B719 B71A B71B B71C B71D B71E B71F	– – –	Action 5 * Shooting a 5600°K white dot.

5-6. Service Mode (SERV 5)

:Mode for displaying RAM data in Servo microcomputer. Note that this mode is not used for servicing purposes.

①Press the Service Mode key five times to display the SERV 5 Screen. (On the SERV 4 Screen, press the Service Mode key once.)

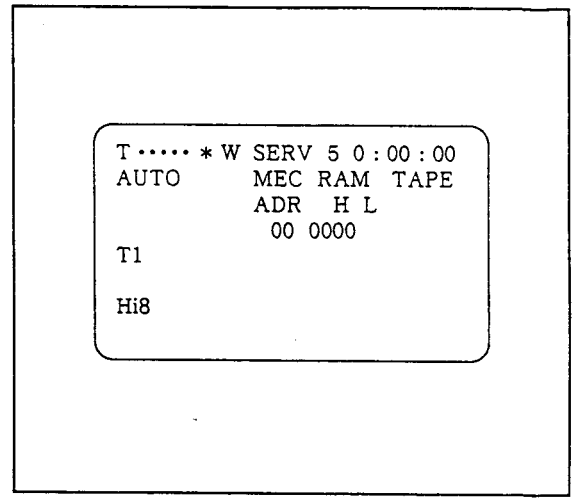


Fig. Ⅱ-39

5-7. Service Mode 6 (SERV 6)

:Mode for cancelling trouble stop and displaing current and past error record.

①Press the Service Mode key six times to display the SERV 6 Screen. (On the SERV 5 Screen, press the Service Mode key once.)

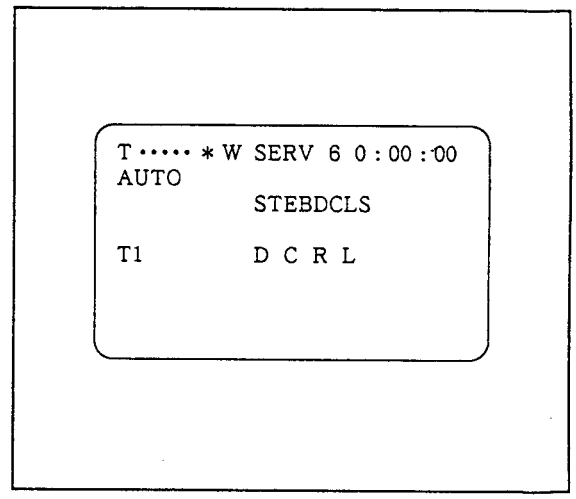


Fig. Ⅱ-38

Upper column
·····Lists current error information. Move the arrow to the symbol of current error information to be displayed.
S→S reel error
T→T reel error
E→End-of-tape (EOT)
B→Beginning-of-tape (BOT)
D→Drum motor error
C→Capstan motor error
L→Loading motor error
S→Arrow mark (→) in LP mode

Lower column
·····Lists past error information. Move the arrow to the symbol of past error information to be displayed.
D→Drum motor error
C→Capstan motor error
R→Reel error
L→Loading motor error

②To clear error information from the screen, press the REC key.

6. AF Electrical Adjustment

6-1. CZ Adjustment (Microcomputer Adjustment)

CZ adjustment must be made when disassembling or replacing the lens unit or encoder PCB.

6-1-1. Preparation for CZ Adjustment

CHART	Siemens chart (2.40m ± 3cm)
M.EQ.	Monitor TV set
TOOL	Character generator (DY9 − 1115 − 000)
ADJ.	Microcomputer adjustment through key inputs

(1) Shortcircuit the points A and C and open the points B and D of the character generator respectively.
(2) Connect lines to the character generator as shown in Figure Ⅱ-38.
Note: Do not turn the VRs (× 2) in the AF PCB.
(3) Mix the CG OUT of the character generator with a video signal for connection with the monitoring TV set (by such means as BNC forked connector).
(4) Connect *1 Pin to RED Pin and *2 Pin to BLACK Pin.
(5) Place the Siemens Chart at a distance of 2.40m ± 3cm from the front of the lens unit.

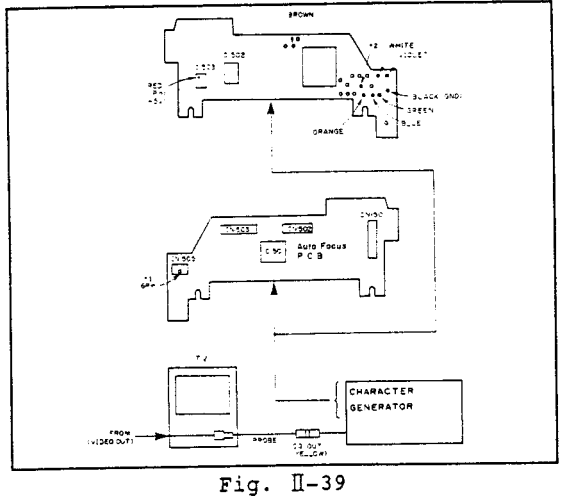


Fig. Ⅱ-39

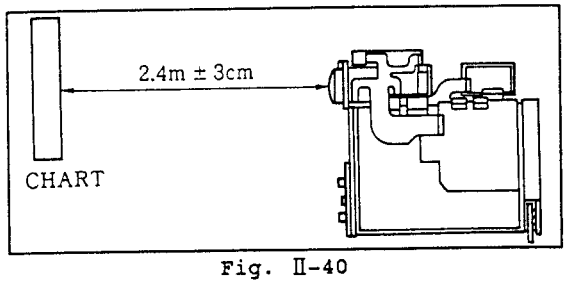


Fig. Ⅱ-40

6-1-2. CZ Adjustment

(1) Power ON the character generator to display the initial screen and wait for about 5 seconds. Then, press the AF ON/OFF button to display the adjustment screen as shown in Figure Ⅱ-40.
(2) Turn focus ring and set a reference stroke value marked on the zoom encoder P.C.B. on the adjustment screen. (Fig. Ⅱ-40).
(3) Confirm that the reference stroke value has been set correctly. Then press the AF ON/OFF button to stop the zoom lens at the wide end.
(4) Turn the focus ring at the wide end to bring the zoom lens into focus at the wide end.
(5) Press the AF ON/OFF button to move the focus lens over a certain distance and stop it.
(6) Press the Power Zoom button to move the zoom lens from the wide end to the telephoto end.
(7) Bring the zoom lens into focus at the telephoto end by taking the following into consideration:
①The focal position of the zoom lens is directly proportional to the zoom encoder and focus encoder values displayed on the adjustment screen.
②The zoom lens reaches its focal position at the telephoto side if it comes into focus for the second time while moving from the wide end to the telephoto side.
③If the zoom lens passes its focal position, it can be returned to the focal position by pressing the Power Zoom button at the wide side.

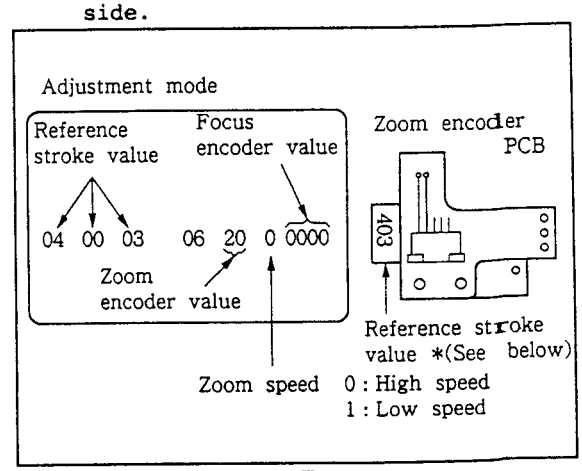


Fig. Ⅱ-41

*Note:When the reference stroke value of your unit has an alphabet letter in the lowermost digit ("D" in the following example.), convert the value into near 400 as possible.

Example

Reference stroke value of your unit	Converted value
98D	398
99D	399
00D	400
01D	401

· Put 3 or 4 on the uppermost digit after removing the "D".

(8) Confirm that the zoom lens is in focus at the telephoto end.
Then press the AF ON/OFF button to return the zoom lens over a certain distance to the wide end.

(9) Check whether the zoom lens is in focus.
· If so, turn the focus ring clockwise by 180 degrees slowly and proceed to step (10).
· If not, turn the focus ring counterclockwise by 180 degrees slowly and return to step (4) to bring the zoom lens into focus again.

(10) Confirm that the adjustment screen changes into the initial screen after a few seconds.
Then power OFF the character generator.

Note:After performing the CZ adjustment, remove character generator from AF P.C.B..

7. Electrical Adjustments to Camera Section

Electrical adjustments 7 – 3 to 7 – 26 must be made in the service mode 4. See "5 – 1. Switching to Service Modes".

<Precautions in Electrical Adjustments to Camera Section>

1 Writing electrical adjustment data into the E²PROM

1) To store any electrical adjustment data in the E²PROM, ensure that the signal sent from the remote controller is stabilized. (Especially after replacing any chart or filter.)
2) After storing any electrical adjustment data in the E²PROM, confirm that the storage has succeeded in the following methods:
   a) Check the LED lamp indicating signal reception flickers.
   b) Change the storage address of the electrical adjustment data and check whether the data also changes. (If the data remains unchanged, it has failed to be stored at that address.)

   * Note that the automatic adjustment (writing only) can be mode only by method a.

   c) Exit the service mode, and power OFF the camera section once and then power it ON. Otherwise, its operation will not reflect the stored electrical adjustment data.

Note: Do not perform the followings to avoid writing the wrong data into the E²PROM.

1) Pushing of REC button repeatedly.

2) Obstructing of infrared beam from the wireless remote controller during the REC button is pressed.

If the either of above is performed, the picture becomes reddish or bluish by the failure in extracting the white balance's data.
If the wrong data is written in, wait for 2 or 3 seconds, and perform the writing again.

2 Checking fixed data in the E²PROM

1) RG pulse voltage.
   Address: B76B
   Data: 69
2) H – APC level
   Address: B74D
   Data: A8
3) V – APC level
   Address: B74C
   Data: 75

3 Initializing the E²PROM

When making automatic iris adjustment and automatic gain control (AGC) again, initialize the following in the E²EPROM.

Address: B7BD Data: 2D
Address: B7ED Data: 00

7-1. Clock Frequency

M.EQ.	Frequency counter Note: Connected via the oscilloscope.
TP/TRIG.	APS P.C.B. TP1001 (CLOCK)
ADJ.	SENSOR P.C.B. VC1 (CLOCK)
SPEC.	14.18750MHz ± 30Hz

7-2. CG Gate Pulse

M.EQ.	Oscilloscope
TP/TRIG.	APS P.C.B. IC1400 Pins ⑩, ⑮
ADJ.	VC1400 (CG)
SPEC.	14 ± 1μsec

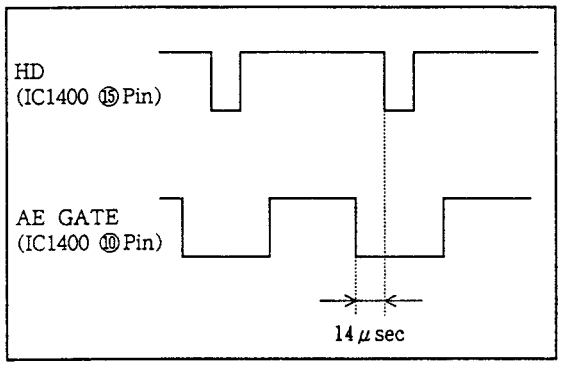


Fig. Ⅱ-42

7-3. DM – PLL

M.EQ.	Digital voltmeter
TP/TRIG.	APS P.C.B. TP1200 (DM – PLL)
ADJ.	APS P.C.B. VC1200 (DM – PLL)
SPEC.	2.5 ± 0.2V

7-4. SG – PLL

M.EQ.	Digital voltmeter
TP/TRIG.	APS P.C.B. TP1004 (SG – PLL)
ADJ.	SENSOR P.C.B. VC2 (SG – PLL)
SPEC.	2.5 ± 0.1V

7-5. V_{sub} Voltage Adjustment

CHART	U chart (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1011 (S/H OUT) /TP1002 (FH/2)
ADJ.	B740 (V_{sub} voltagae adjustment data address)
SPEC.	510 ± 10mV

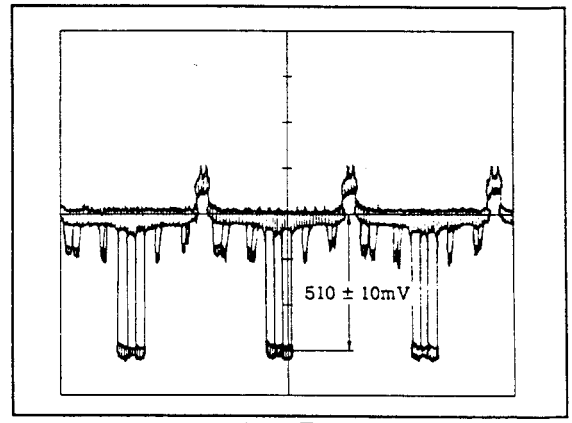


Fig. Ⅱ-43

7-6. Iris Encoder Adjustment

CHART	Light box (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope and digital voltmeter
TP/TRIG.	APS PCB TP1402 (IRIS POSITION)
ADJ.	B741 (Iris encoder adjustment data address)
SPEC.	(Automatic adjustment) OPEN 3 ± 0.2V CLOSE 1 ± 0.2V

* After automatically adjusting data at address B741, confirm that the voltage of TP1402 Pin is 3V and 1V with the iris opened and closed respectively. To open and close the iris, connect TP1403 (IRIS O/C) Pin to TP (5V) Pin and TP 1403 (IRIS O/C) Pin to TP (GND) Pin.

7-7. Automatic Iris Adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1011 (S/H OUT) /TP1002 (FH/2)
ADJ.	B744 (Automatic iris adjustment data address)
SPEC.	180 ± 10mV

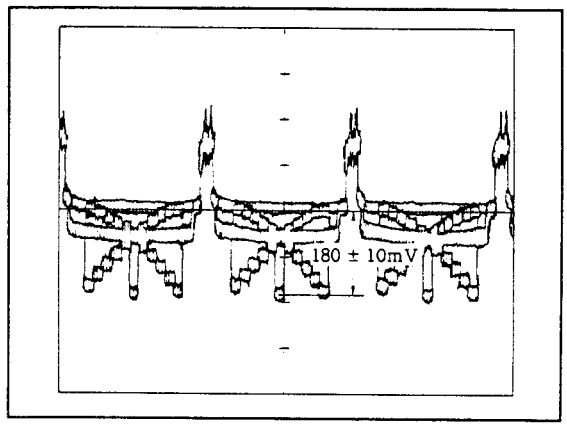


Fig. II-44

7-8. Automatic Gain Control (AGC)

CHART	Gray scale (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1005 (YH) /TP1002 (FH/2)
ADJ.	B745 (Automatic gain control (AGC) data address)
SPEC.	220 ± 10mV

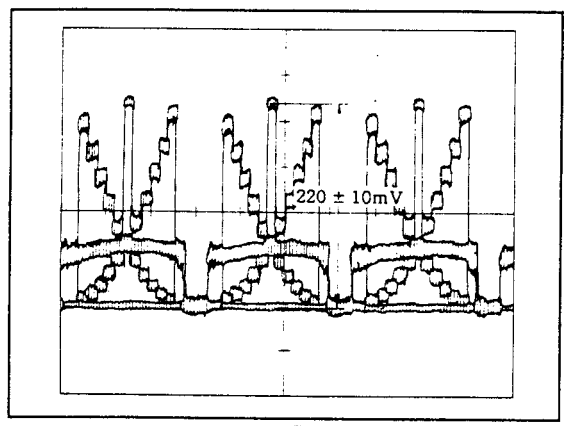


Fig. II-45

7-9. Black Adjustment

MODE	Service mode 4
ADJ.	B74E (Black adjustment data address)
SPEC.	Automatic adjustment

Note: Perform this adjustment after the Auto matic iris (B744) and AGC (B745) adjustments.

7-10. Y1 Gain Adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB Difference between TP1007 (DL Y1) and TP1006 (DL Y0)
ADJ.	B746 (Y1 gain adjustment data address)
SPEC.	0 ± 10mV

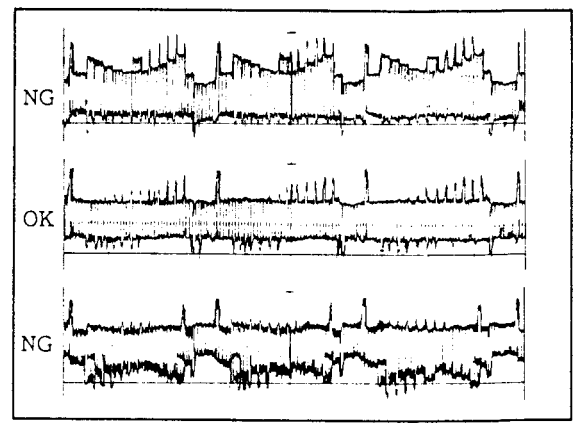


Fig. II-46

7-11. Y2 Gain Adjustment

CHART	Gray scale (5600°K)
MODE	Service Mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1300 (VAP) /TP1002 (FH/2)
ADJ.	B747 (T2 gain adjustment data address)
SPEC.	0 ± 10mV

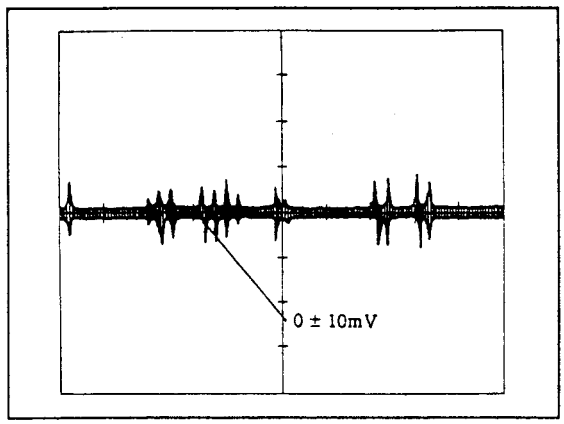


Fig. Ⅱ-47

7-12. SYNC Level Adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1302 (Y OUT) /TP1002 (FH/2)
ADJ.	B748 (SYNC level adjustment data address)
SPEC.	300 ± 20mV

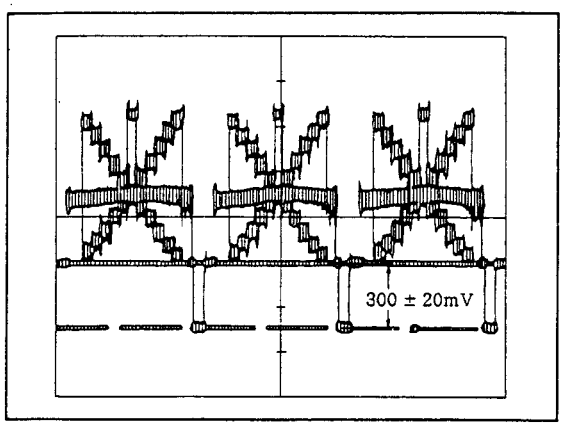


Fig. Ⅱ-48

7-13. Setup Level Adjustment

CHART	Lens Close
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1302 (Y OUT) /TP1002 (FH/2)
ADJ.	B749 (Setup level adjustment data address)
SPEC.	10 ± 10mV

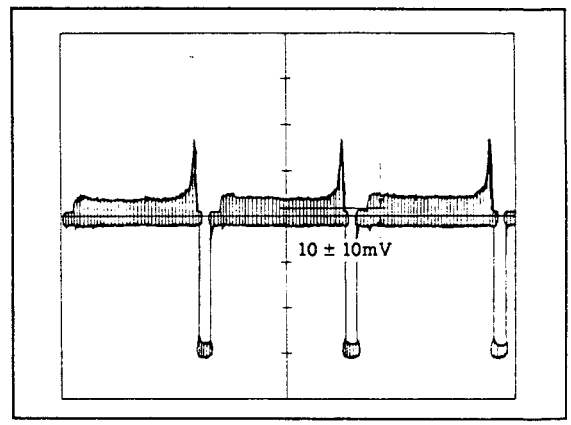


Fig. Ⅱ-49

7-14. White Clip Level Adjustment

CHART	Wind chart
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1302 (Y OUT) /TP1002 (FH/2)
ADJ.	B74A (White clip level adjustment data address)
SPEC.	810 ± 20mV

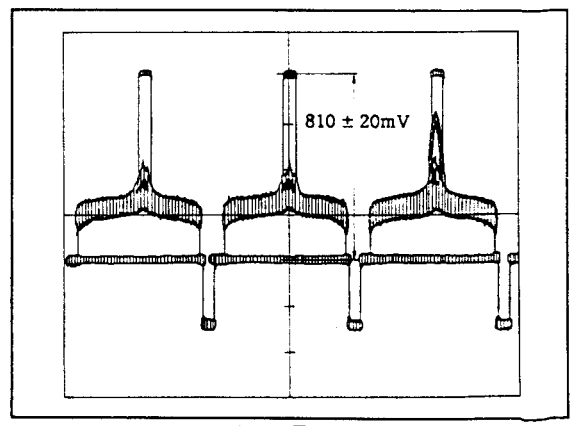


Fig. Ⅱ-50

7-15. Y Level Adjustment

CHART	Gray scale
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1302 (Y OUT) /TP1002 (FH/2)
ADJ.	B74B (Y level adjustment data address)
SPEC.	700 ± 20mV

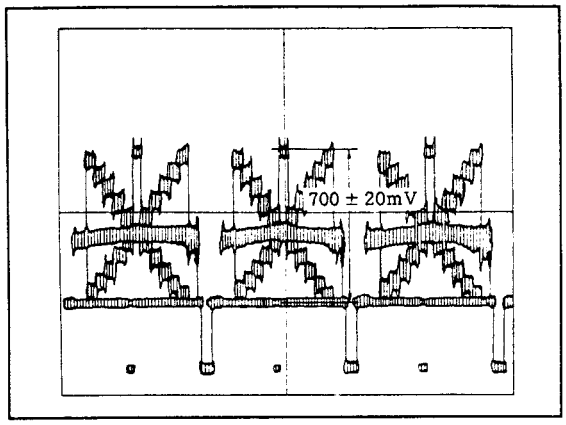


Fig. Ⅱ-51

7-16. C Level Adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1009 (G OUT) /TP1002 (FH/2)
ADJ.	B752 (C level adjustment data address)
SPEC.	400 ± 10mV

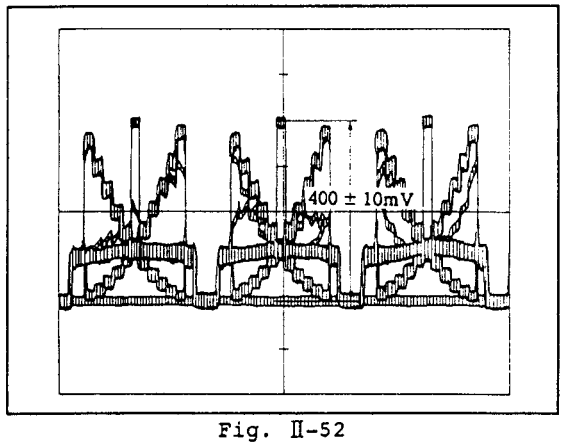


Fig. Ⅱ-52

7-17. C1 Gain Adjustment

CHART	Color bar chart
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B751 (C1 level adjustment data address)
SPEC.	Superimpose individual bright dots upon one another. Tolerances are: Phase ;5° Gain ;10%

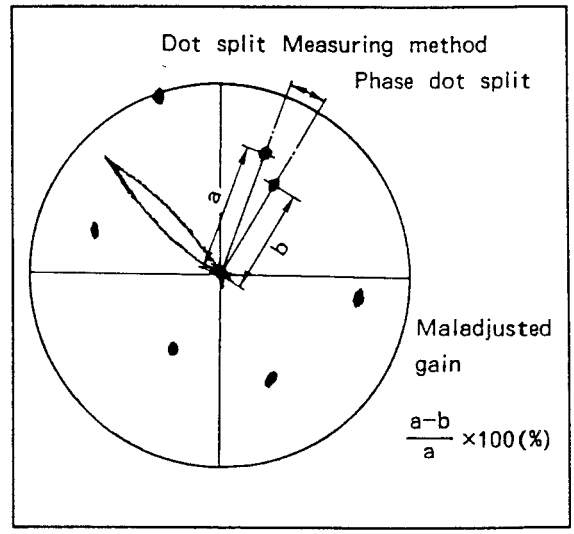


Fig. Ⅱ-53

7-18. Carrier Balance R-Y Adjustment

CHART	Black chart
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B754 (Carrier balance R-Y adjustment data address)
SPEC.	Each dots (dark) must be centered.

7-19. CB B-Y

CHART	Black chart
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B755 (Carrier Balance B-Y adjustment data address)
SPEC.	Each dots (dark) must be centered.

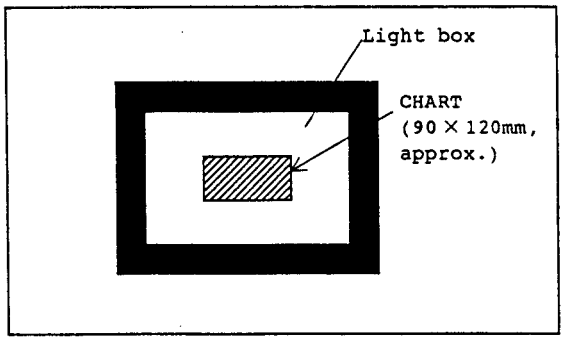


Fig. II-54

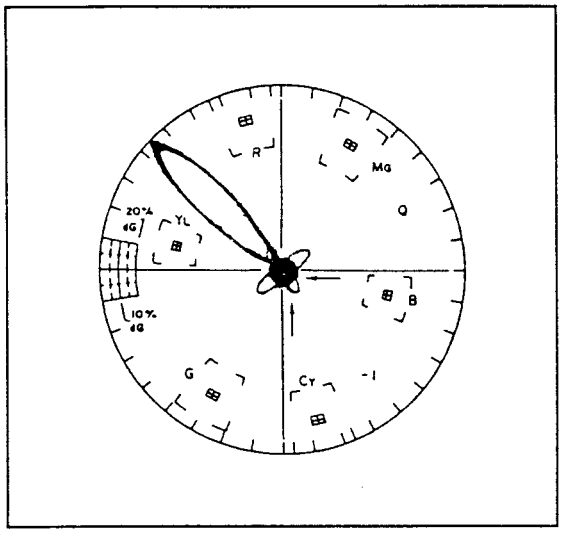


Fig. II-55

7-20. R Gain Adjustment

CHART	Light box (5600°K)
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B756 (R gain adjustment data address)
SPEC.	Each dots (white) must be centered.

7-21. B Gain Adjustment

CHART	Light box (5600°K)
MODE	Service mode 4
M.EQ.	Vector scope
TP/TRIG.	VIDEO OUT
ADJ.	B757 (B gain adjustment data address)
SPEC.	Each dots (white) must be centered.

7-22. Burst Level Adjustment

MODE	Service mode 4
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP1301 (C OUT) /TP1002 (FH/2)
ADJ.	B750 (Burst level adjustment data address))
SPEC. for UC1HiE	300 ± 20mV
SPEC. for UC20F	300 ± 20.5mV

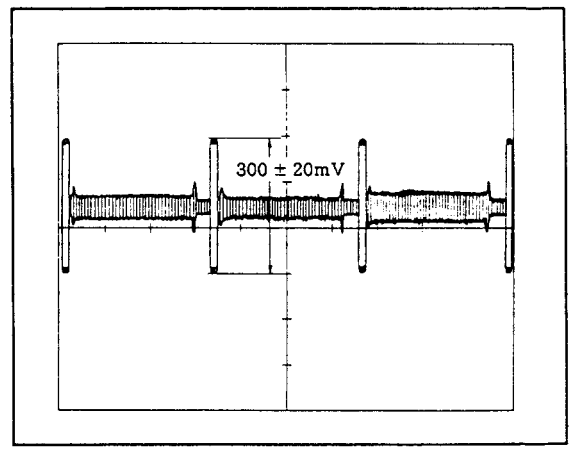


Fig. II-56

7-23. Color Balance

CHART	Color bar chart (5600°K)
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B758 (R − Y gain adjustment data address) B759 (B − Y gain adjustment data address) B75A (R − Y hue adjustment address) B75B (B − Y hue adjustment address)
SPEC. for UC1HiE	Color phase Gain (relative to burst level) Red: 102 ± 2° 2.0 ± 0.1 times Yellow: 165 ± 2° 1.7 ± 0.1 times
SPEC. for UC20E	Color phase Gain (relative to burst level) Red: 98 ± 2° 2.0 ± 0.1 times Yellow: 160 ± 2° 1.3 ± 0.1 times

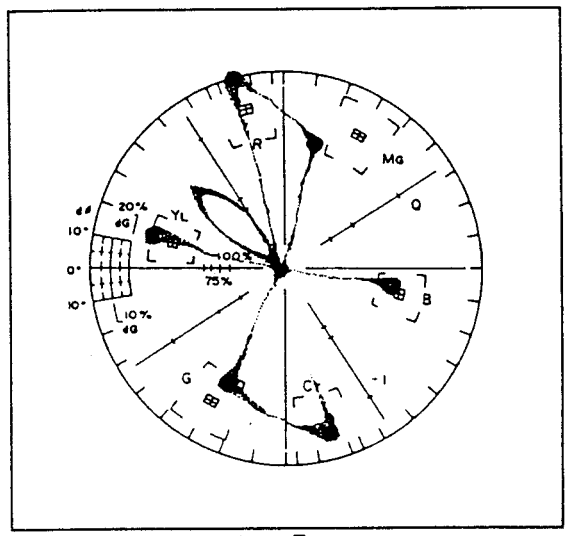


Fig. II-57

7-24. White Balance Adjustment (1)

CHART	Light box (5600°K)
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B760 (5600°K R contrast adjustment data address) B761 (5600°K B contrast adjustment data address)
SPEC.	Bright dots must be centered.

7-25. White Balance Adjustment (2)

CHART	Light box (5600°K) + CCA12
MODE	Service mode 4
M.EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	B75C (3200°K R contrast adjustment data address) B75D (3200°K B contrast adjustment data address)
SPEC.	Bright dots be centered.

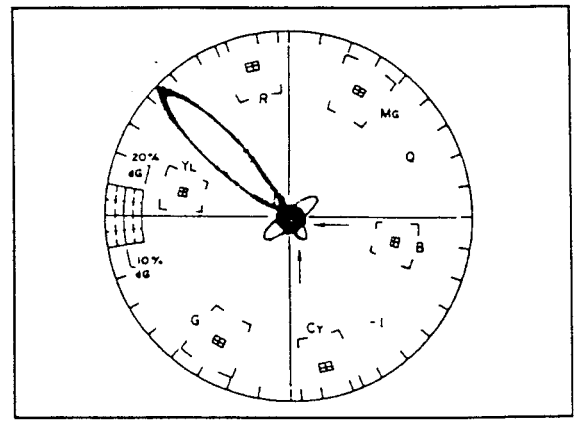


Fig. II-58

7-26. 3200°K White Balance Reference Adjustment

CHART	Light box (5600°K) + CCA12
MODE	Service mode 4
ADJ.	B766 (3200°K white balance reference adjustment data)
SPEC.	Adjusted automatically.

7-27. 5600°K White Balance Reference Adjustment

CHART	Light box (5600°K)
MODE	Service mode 4
ADJ.	B767 (5600°K white balance reference adjustment data)
SPEC.	Adjusted automatically.

7-28. 5600°K White Balance Set Adjustment

CHART	Light box (5600°K)
MODE	Service mode 4
ADJ.	B764 (5600°K white balance set adjustment data)
SPEC.	Adjusted automatically.

7-29. TP/VR. VC List

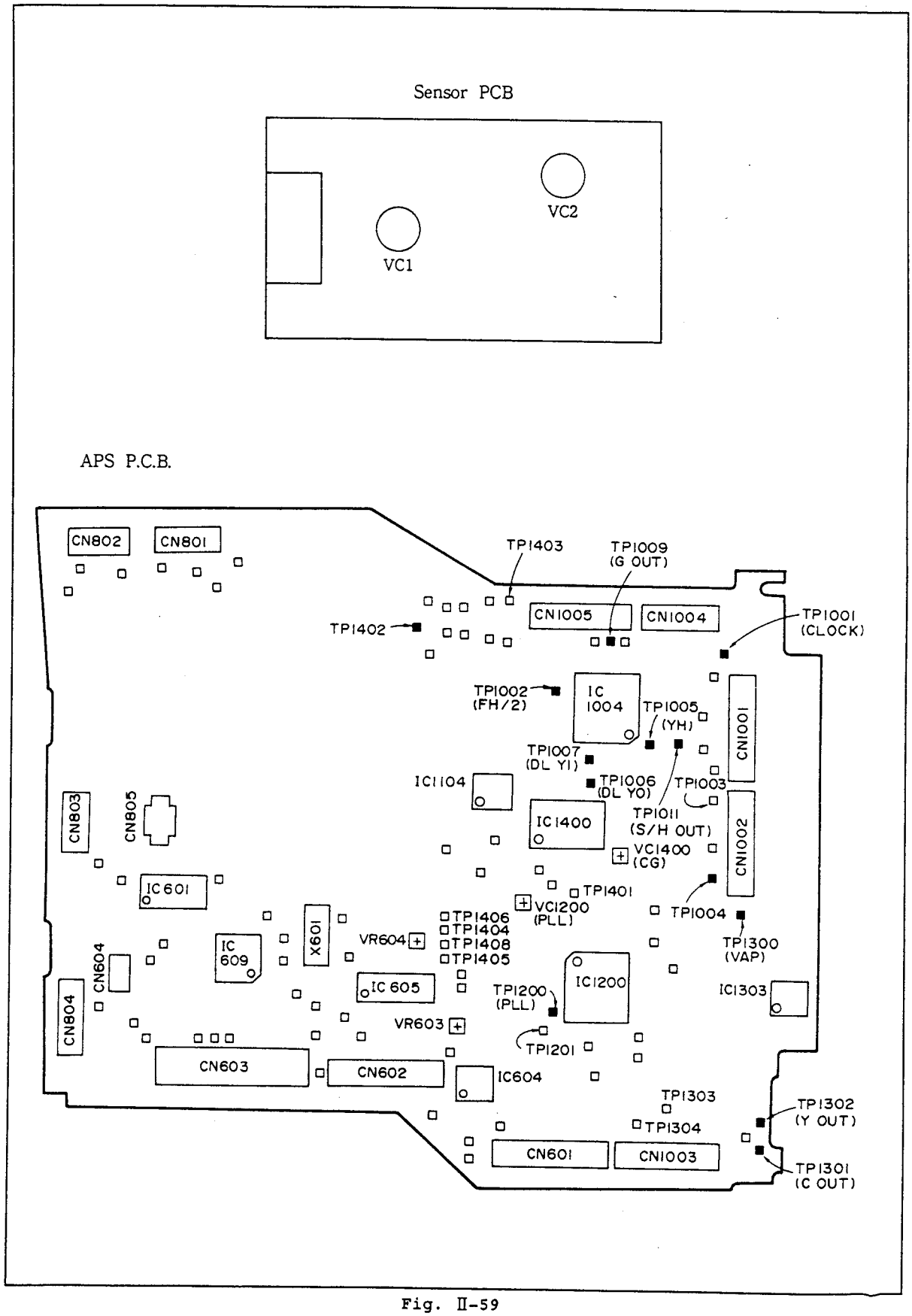


Fig. II-59

8. Electrical Adjustments of Recorder Section

Preparation before Adjustments in REC/EE Mode

Tools/Equipments to be prepared :
- ·Y/C Separator DY9-1093-500
- ·Pattern Generator
- ·Input Cable DY9-1281-000

Procedures :
1) Connect the VIDEO OUT terminal of Pattern Generator to the INPUT terminal of Y/C Separator.
   Then, connect the OUTPUT terminal of Y/C Separator to the CN058 of VS P.C.B. using the input cable.
2) Supply the voltage to the Y/C Separator from the 6V Constant Voltage Supplier, and set the Y/C select switch to "C".
3) Supply a colourbar signal from the Pattern Generator to the Y/C Separator.
4) Observe the signal waveform at pin 12 of CN058 (VS P.C.B.).
5) Adjust the DC level at the synchronizing tip to 2.5 V by the VR201 of Y/C Separator. (A in the figure below)
6) Set the Y/C select switch to "Y".
7) Observe the signal waveform at pin 9 of CN058 (VS P.C.B.).
8) Adjust the DC level at the synchronizing tip to 2.5 V by the VR202 of Y/C Separator. (B in the figure below)
9) Set the Y/C select switch to "C". (Then, you can supply the video signal for the adjustments in REC/EE mode !)

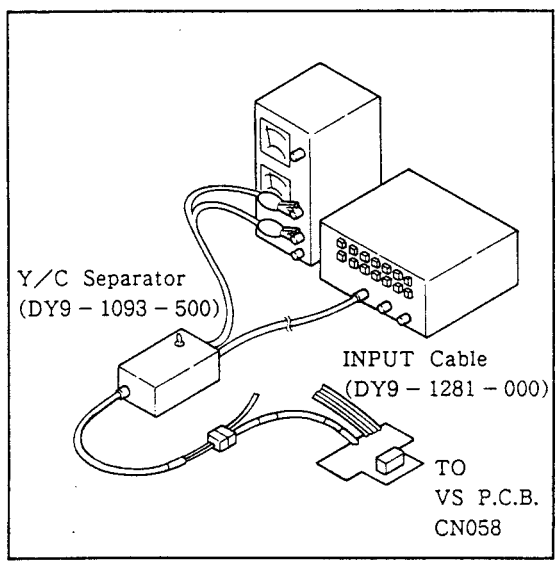


Fig. II-60-1

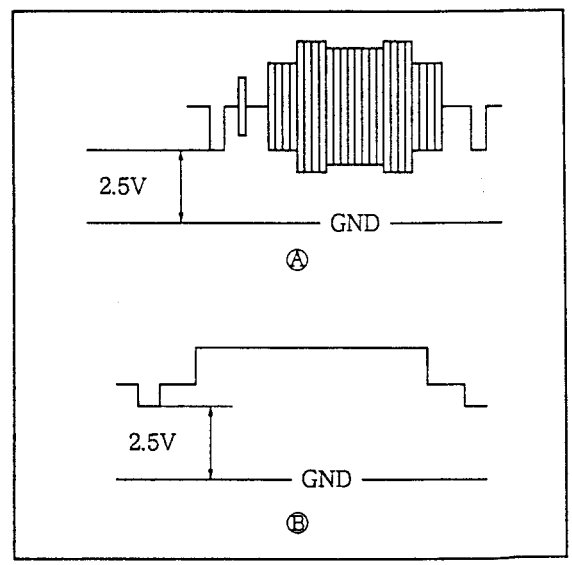


Fig. II-60-2

8-1. Switching Frequency (Power) Adjustment

MODE	REC PAUSE
M.EQ.	Frequency counter Note: Connected via an oscilloscope.
TP/TRIG.	POWER SUPPLY PCB IC001 – 16pin
ADJ.	POWER SUPPLY PCB VR003 (PWM)
SPEC.	480 ± 5KHz

Note: Apply 6.00 ± 0.02V to the battery terminal.

8-2. +15.5V Signal Adjustment

MODE	REC PAUSE
M.EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY PCB CN001 – 27pin
ADJ.	POWER SUPPLY PCB VR001(+15.5V)
SPEC.	15.20 ± 0.25VDC

Note: Apply 6.00 ± 0.02V to the battery terminal.

8-3. VIDEO 5V Signal Adjustment

MODE	REC PAUSE
M.EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY PCB CN001-20pin
ADJ.	POWER SUPPLY PCB VR002(5V)
SPEC.	4.95 ± 0.05VDC

Note: Apply 6.00 ± 0.02V to the battery terminal.

8-4. CAMERA 5V Signal Adjustment

MODE	REC PAUSE
M.EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY PCB CN001-24pin
ADJ.	POWER SUPPLY PCB VR004(CAM5V)
SPEC.	5.00 ± 0.1VDC

Note: Apply 6.00 ± 0.02V to the battery terminal.

8-5. Undercut Adjustment

MODE	REC PAUSE
M.EQ.	Service mode 1 Digital voltmeter
SPEC.	5.70 ± 0.05VDC

Procedure:
1) Apply 5.70 ± 0.05V to the battery terminal.
2) Load a cassette tape, and set the REC PAUSE mode.
3) Press the REC key.
4) Clear the REC PAUSE mode.

8-6. Switching Point Adjustment

MODE	Alignment tape E (Monosco) (DY9-1062-000)
M.EQ.	PB
TP/TRIG.	VIDEO OUT VS PCB CN058 – 7pin
ADJ.	VS PCB VR051(SWP)
SPEC.	7.0 ± 1H

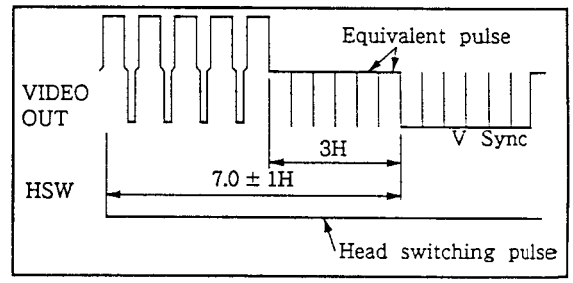


Fig. II-61

8-7. Jitter Error Bias Adjustment

SIGNAL	Color bar
MODE	REC
M.EQ.	Digital voltmeter
TP/TRIG.	APS PCB TP602
ADJ.	APS PCB VR604(BIAS)
SPEC.	2.0 ± 0.1VDC

8-8. Capstan FG offset adjustment

SIGNAl	Color bar
MODE	REC
TP/TRIG.	VS P.C.B. CN058 pin 1 (C-FG)
ADJ.	VS P.C.B. VR053 (C-FG OFFSET)
SPEC.	Duty 50 ± 5%

Adjust VR053 so C-FG output waveform duty will be 50%.

8-9. Jitter Error Correction

SIGNAL	Color bar
MODE	REC
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB TP601
ADJ.	APS PCB VR603 (J ERR)
SPEC.	1.6 ± 0.2VDC

Note: After jitter error correction, make jitter error bias adjustment (see 8-7) to check for a jitter error bias. If any jitter error bias exists, make jitter error bias adjustment again.

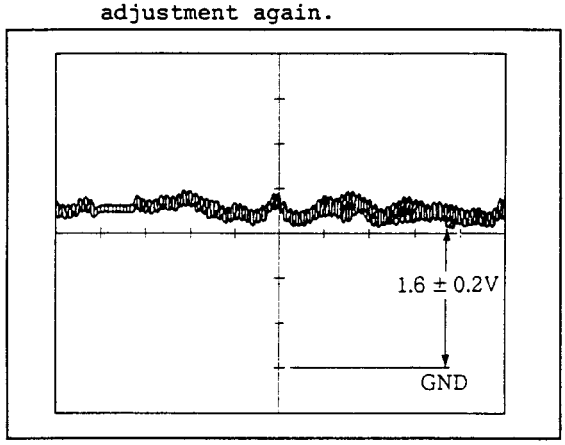


Fig. II-62 1mS/50mVDC

8-10. Video Automatic Gain Control (AGC)

SIGNAL	100% white video signal
MODE	REC
M.EQ.	Oscilloscope
TP/TRIG.	VS PCB IC205 – 7pin
ADJ.	VS PCB VR213 (AGC)
SPEC.	0.50 ± 0.02Vp – p

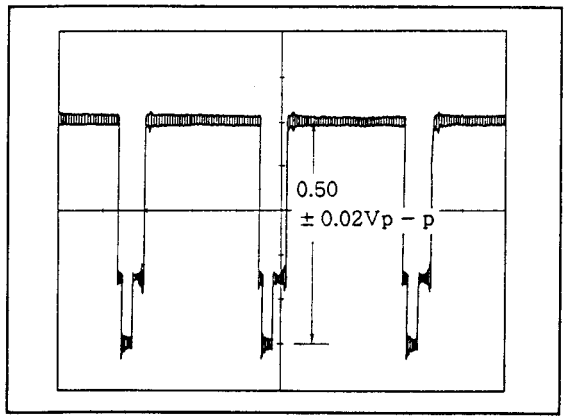


Fig. II-63 20μS/10mV

8-11. REC Y Level Adjustment

SIGNAL	100% white video signal	
MODE	REC	
M.EQ.	Oscilloscope	
TP/TRIG.	UC1Hi	VS PCB IC205-3pin
	UC20	VS PCB IC205 – 3pin
ADJ.	VS PCB VR210 (REC – Y)	
SPEC.	0.50 ± 0.02Vp – p	

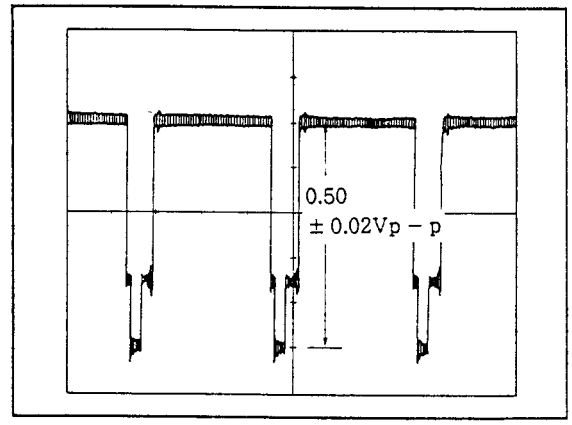


Fig. II-64 20μS/10mV

8-12. Y/C Separation Adjustment

SIGNAL	UC1Hi	Color bar signal (PB)
	UC20	Color bar signal (PB)
MODE	UC1Hi	PLAYBACK
	UC20	PLAYBACK
M.EQ.	Oscilloscope	
TP/TRIG.	UC1Hi	VS PCB IC205 – 11pin
	UC20	VS PCB Q202 – E
ADJ.	VS PCB VR218, VR212	
SPEC.	Minimize the Chrominance component.	

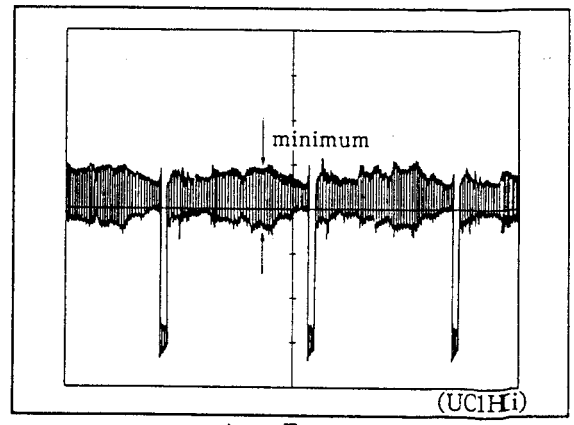


Fig. II-65 20μS/10mV

8-13. Y FM Carrier (Normal) Adjustment

SIGNAL	No signal (Option terminal)
MODE	Normal REC
M.EQ.	Frequency counter Note: Connected via an oscilloscope.
TP/TRIG.	VS PCB IC205 – 43pin
ADJ.	VS PCB VR215 (N CAR)
SPEC.	4.38 ± 0.02MHz

Notes: 1.Load a normal cassette tape.
2.Only for the UC1Hi, perform the Y FM carrier (Hi8) adjustment (8-15) after this adjustment.

8-14. Y FM Deviation (Normal) Adjustment

SIGNAL	100% white video signal
MODE	Normal REC
M.EQ.	Oscilloscope
TP/TRIG.	VS PCB IC205 – 43pin
ADJ.	VS PCB VR217 (N DEV)
SPEC.	0.19μsec/1cycle

Notes: 1.Load normal tape.
2.Observe the video signal at the point where it has the shortest cycle.
3.Only for the UC1Hi, perform the Y FM deviation (Hi8) adjustment (8-16) after this adjustment.

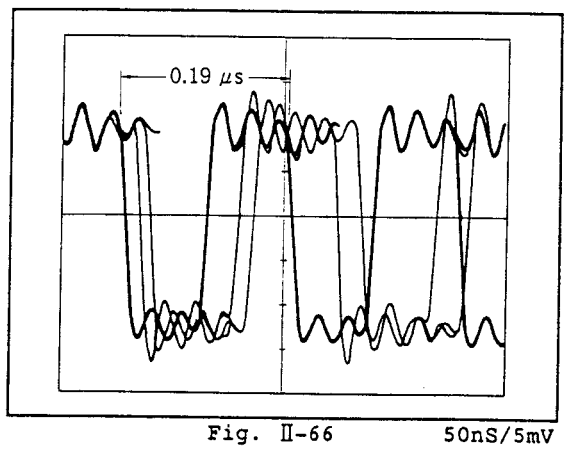


Fig. II-66 50nS/5mV

8-15. Y FM Carrier (Hi8) Adjustment (UC1HiE ONLY)

SIGNAL	No signal (Open terminal)
MODE	Hi8REC
M.EQ.	Frequency counter Note: Connected via an oscilloscope.
TP/TRIG.	VS PCB IC205 – 43pin
ADJ.	VS PCB VR214 (H CAR)
SPEC.	5.99 ± 0.02MHz

Notes: 1.Connect an oscilloscope.
2.Before the adjustment, perform the Y FM carrier (normal) adjustment (8-13).

8-16. Y FM Deviation (Hi8) Adjustment (UC1HiE ONLY)

SIGNAL	100% white video signal
MODE	Hi8REC
M.EQ.	Oscilloscope
TP/TRIG.	VS PCB IC205 – 43pin
ADJ.	VS PCB VR216 (H DEV)
SPEC.	0.3975μsec/3cycle

Notes: 1.Load Hi8 tape.
2.Observe the video signal having the shortest cycle.
3.Before the adjustment, perform the Y FM deviation (normal) adjustment (8-14).

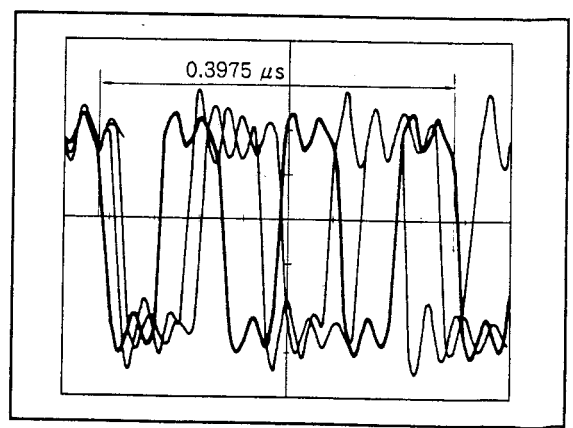


Fig. II-67 50nS/5mV

8-17. Recording Current Y Adjustment

SIGNAL	No signal (Open terminal)	
MODE	UC1Hi	Hi8REC
	UC20	REC
M.EQ.	Oscilloscope (1:1)	
TP/TRIG.	UC1Hi	VS PCB Q261-1pin
	UC20	VS PCB Q268-E
ADJ.	VS PCB VR201 Y CUR	
SPEC.	250 ± 10mV	

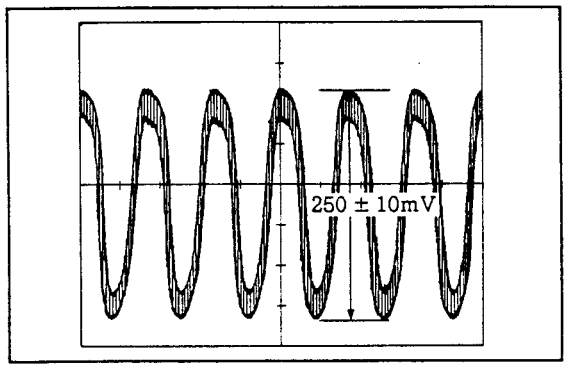


Fig. II-68 0.1μS/50mV

8-18. Recording Current AUDIO Adjustment

SIGNAL	Red raster signal	
MODE	UC1Hi	Hi8REC
	UC20	REC
M.EQ.	Oscilloscope (1:1)	
TP/TRIG.	UC1Hi	VS PCB VR202 – 3pin
	UC20	VS PCB VR202 – 1pin
ADJ.	VS PCB VR202 AFM CUR	
SPEC.	UC1Hi	80 ± 5mV
	UC20	180 ± 5mV

Note: Before this adjustment, shortcircuit the pin 24 and ground Pin 24 and GND of VS PCB (CN 057)

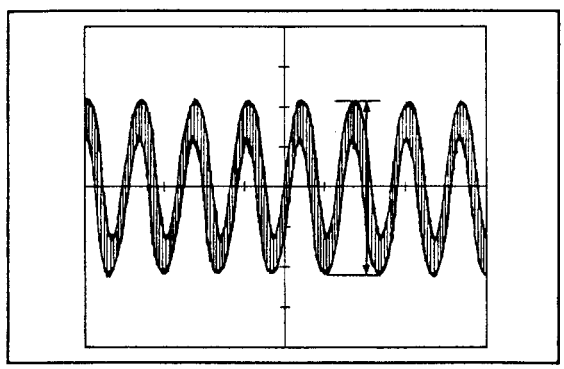


Fig. II-69 0.5μS/10mV

8-19. Recording Current ATF Adjustment

SIGNAL	Red raster signal	
MODE	UC1Hi	Hi8 REC
	UC20	REC
M.EQ.	Oscilloscope (1:1)	
TP/TRIG.	UC1Hi	VS PCB VR203 – 3pin
	UC20	VS PCB VR203 – 1pin
ADJ.	VS PCB VR203 ATF CUR	
SPEC.	UC1Hi	200 ± 10mV
	UC20	28 ± 5mV

Note: Before this adjustment, shortcircuit the Q 934-Ⓑ and GND. (APS PCB)

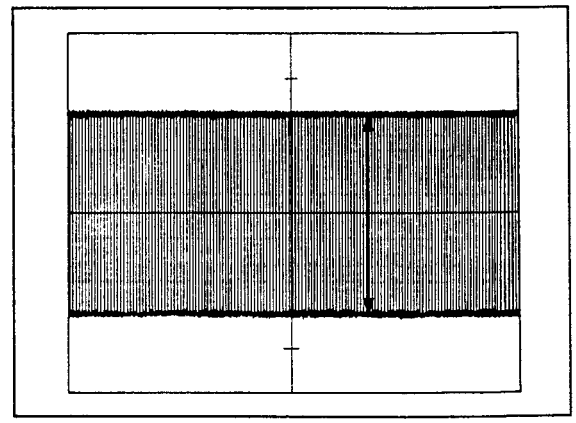


Fig. II-70 0.1mS/5mV

8-20. Recording Current C Adjustment

SIGNAL	Red luster signal	
MODE	UC1Hi	Hi8REC
	UC20	REC
M.EQ.	Oscilloscope (1:1)	
TP/TRIG.	UC1Hi	VS PCB Q218-6pin (CH − 1) VS PCB Q218-5pin (CH − 2) VS PCB Q216-6pin (CH − 3) VS PCB Q216-5pin (CH − 4) VS PCB CN058-6pin(1/2SWP) VS PCB FL202-6pin
	UC20	VS PCB Q218-6pin (CH − 1) VS PCB Q218-5pin (CH − 2) VS PCB Q216-6pin (CH − 3) VS PCB Q216-5pin (CH − 4) VS PCB CN058-6pin(1/2SWP) VS PCB Q223-E
ADJ.	VS PCB VR204 (CH-1) VS PCB VR205 (CH-2) VS PCB VR206 (CH-3) VS PCB VR207 (CH-4)	
SPEC.	UC1Hi	100 ± 5mVp − p
	UC20	50 ± 5mVp − p

Procedure:

1. Adjust the peak-to-peak values of the red raster signals on TP 1 to 4 channels to 100mVp-p in the Hi8 REC mode. (preliminary adjustment)
2. Observe Pin 42 of IC 206 in the Hi8 REC and PB modes to check variations in the peak-to-peak values of the red raster signals on TP 1 to 4 channels.
3. Check whether the ratio of the minimum to maximum peak-to-peak values is 1:1.3 or less. If so, the variations in the peak-to-peak values are acceptable. If not, return to step 1 and make preliminary adjustment again to reduce the variations.
4. Repeat steps 1 to 3 to reduce the variations during playback to the acceptable level.

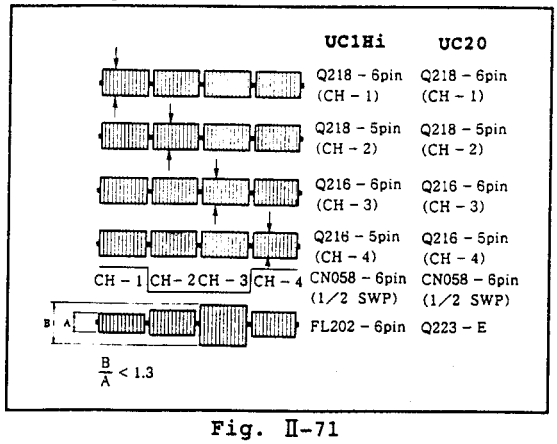


Fig. II-71

8-21. De-emphasis Y Level Adjustment

SIGNAL	White 100% video signal
MODE	PB
M.EQ.	Oscilloscope
TP/TRIG.	VS PCB IC205 − 15pin
ADJ.	VS PCB VR208 (DE EMPH)
SPEC.	0.50 ± 0.01Vp − p

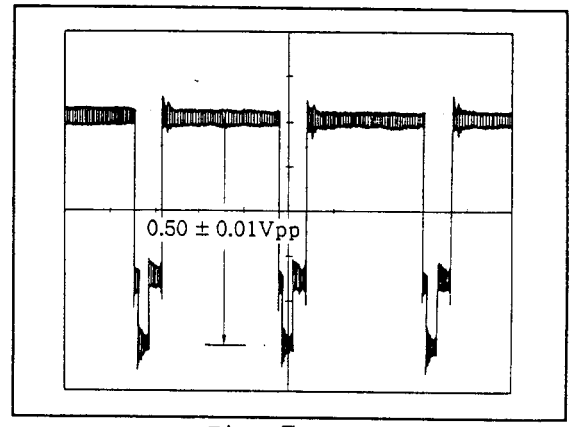


Fig. II-72 20μS/10mV

8-22. Playback (PB) Y Level Adjustment

SIGNAL	White 100% video signal	
MODE	PB	
M.EQ.	Oscilloscope	
TP/TRIG.	UC1Hi	VS PCB IC205-3pin
	UC20	VS PCB Q234-6pin
ADJ.	VS PCB VR209 (PB Y)	
SPEC.	0.50 ± 0.01Vp − p	

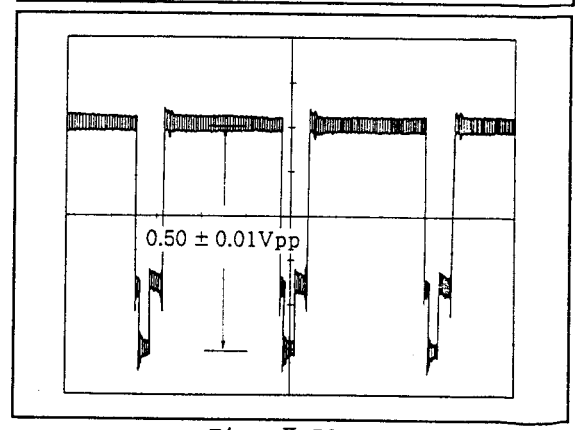


Fig. II-73 20μS/10mV

8-23. Playback (PB) Peaking Adjustment (UC1HIE ONLY)

SIGNAL	V sweep master signal
MODE	PB
M.EQ.	Oscilloscope
TP/TRIG.	VS PCB Q506 – E CN058 – 6pin
ADJ.	VS PCB VR504(CH-1) VS PCB VR501(CH-2) VS PCB VR502(CH-3) VS PCB VR503(CH-4)
SPEC.	$\frac{V8.5}{V4.5}=\frac{2\pm0.2}{3}$

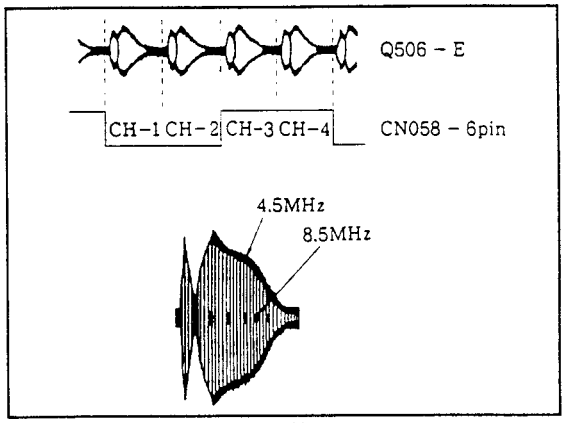


Fig. II-74

8-24. Character Position of Character Generator Adjustment

SIGNAL	Color bar signal
MODE	REC
M.EQ.	Monitor TV
ADJ.	VS PCB VC201 (CG)
SPEC.	Position the rightmost character on the counter between the blue and black bars.

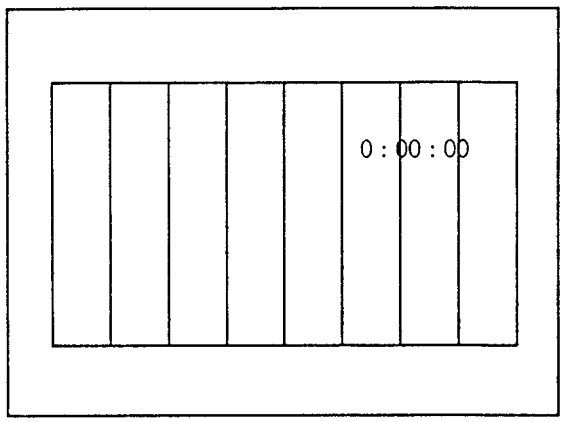


Fig. II-75

8-25. JOG chrominance phase adjustment

SIGNAL	Color bar signal (REC/PB)
MODE	SEARCH
M.EQ.	Monitor TV
ADJ.	VS PCB VR219 (JOG BURST)
SPEC.	Reduce black noise bars appearing under each white noise bars as possible.

8-26. Recording Matrix (AUDIO) Adjustment

SIGNAL	3kHz/40mVp – p
MODE	REC
M.EQ.	Oscilloscope, Frequency oscillator
TP/TRIG.	APS PCB IC933-1pin
ADJ.	APS PCB VR935
SPEC.	Min. P – P value

Procedure:

1. Apply the signal of 3 kHz/40 mVp-p to the pins 28 and 36 (IC933) from the frequency oscillator via the capacitor of 4.7 μF (approx), and then record it.
2. Adjust the VR935 (APS) PCB so that the waveform of pin 1 (IC933, APS PCB) is minimized.

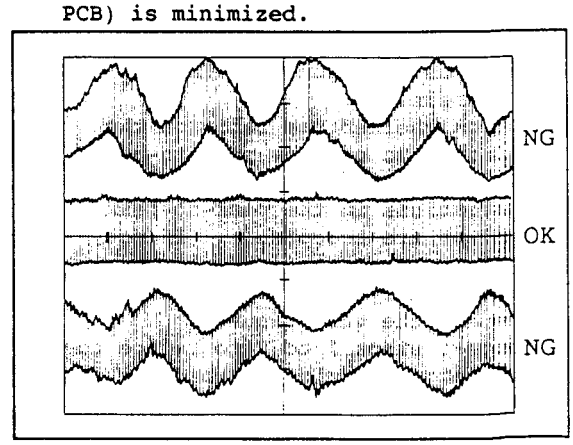


Fig. II-76

8-27. Playback matrix (AUDIO) Adjustment

SIGNAL	3kHz/40 mV
MODE	REC/PB
M.EQ.	Oscilloscope, Frequency oscillator, AC voltmeter
TP/TRIG.	APS PCB IC933-4pin
ADJ.	APS PCB VR936 (PB MAT)
SPEC.	Minimize peak-to-peak value.

Procedure:

1. Apply the signal of 3 kHz/40 mV to the pins 28 and 36 (IC933) from the frequency osillator via the capacitor of 4.7 μF (approx), and then record it.
2. Playback the above portion recorded. and adjust VR936 (APS PCB) so that the peak-to-peak value of the Lch terminal output becomes minimal.

Notes: 1.Before the adjustment, perform the Recording matrix adjustment (8-26).
2.Be sure to insert a pin into the R ch terminal when performing this adjustment.

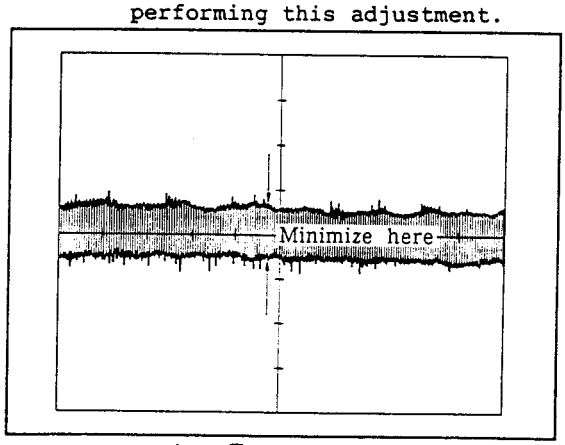


Fig. II-77 0.2mS/10mV(1:1)

8-28. Carrier (AUDIO) Adjustment

SIGNAL	Alignment tape (STEREO) DY9 – 1292 – 500
MODE	PB
M.EQ.	Oscilloscope
TP/TRIG.	APS PCB IC931 – 6pin, 44pin(Lch) APS PCB IC932 – 6pin, 44pin(Rch)
ADJ.	APS PCB VR931(Lch) APS PCB VR932(Rch)
SPEC.	0V

Procedure:

1. Play back the alignment tape (stereo).
2. Monitor the playback sound and observe the potential difference between the pins 6 and 44 of IC931 (APS PCB).
3. Adjust the VR931 in such a way that the playback sound is normal (there is no howling sound, etc.) and that there is no potential difference.
4. Observe the pins 6 and 44 of VR932 (APS PCB) in the same manner as in 2 and 3, and then adjust them with the VR932.

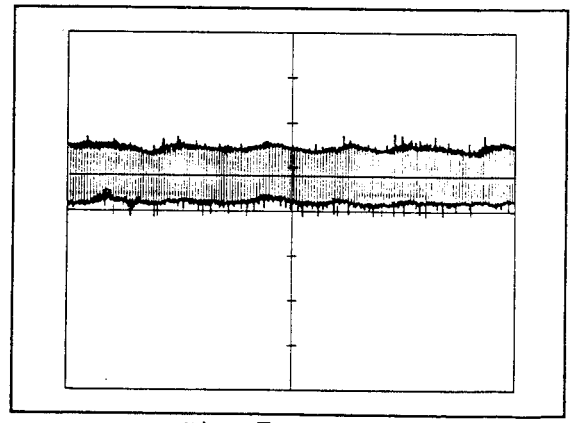


Fig. II-78 0.1mS/50mVDC

8-29. Deviation (AUDIO) Adjustment

SIGNAL	Alignment tape (STEREO) DY9 – 1292 – 500
MODE	PB
M.EQ.	AC voltmeter
TP/TRIG.	Stereo line terminal
ADJ.	APS PCB VR933, VR934(DEV)
SPEC.	-10 ± 0.5dB

Notes: 1.Be sure to do this by always inserting a pin into the Rch terminal.
2.Before the adjustment, perform the carrier (AUDIO) adjustment (8-28).

8-28. TP/VR List

POWER SUPPLY P.C.B.

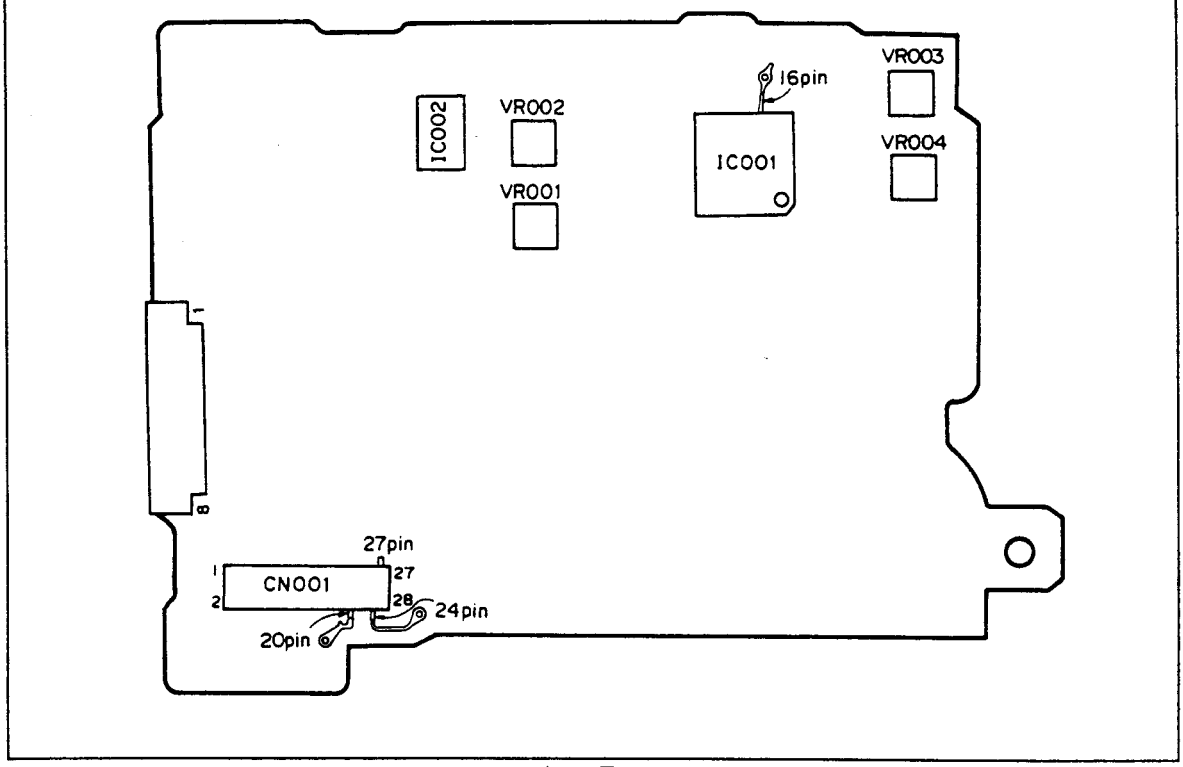


Fig. II-79

V.S. P.C.B. (UC1HiE)

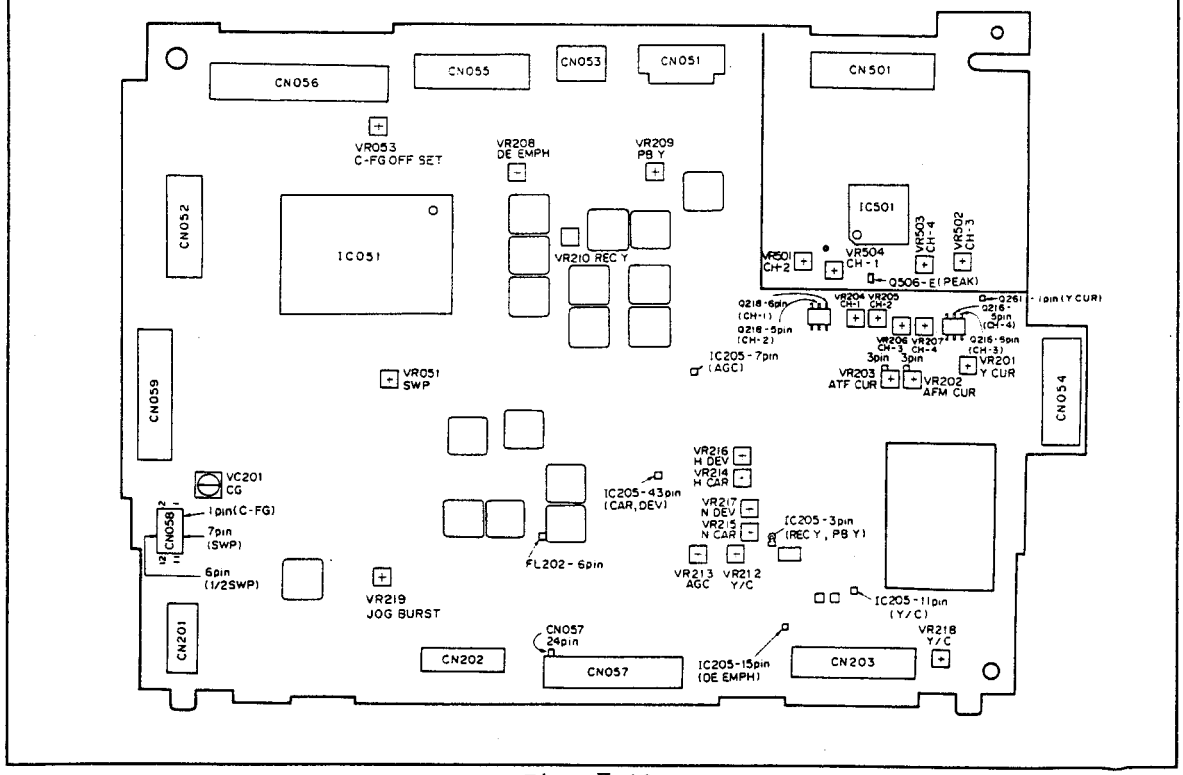


Fig. II-80

V.S. P.C.B. (UC20E)

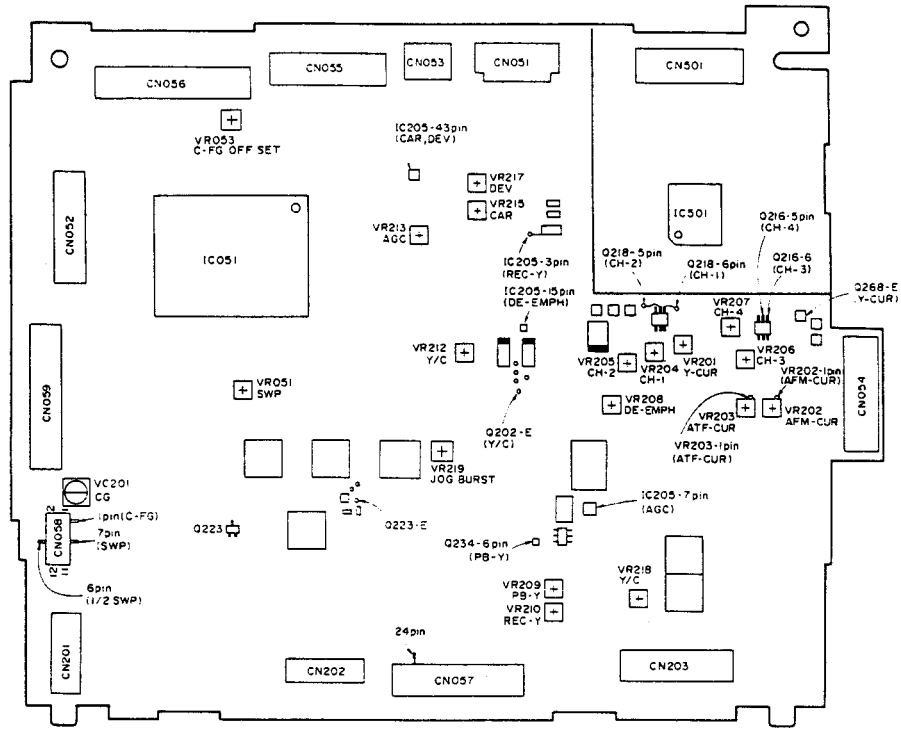


Fig. II-81

APS P.C.B.

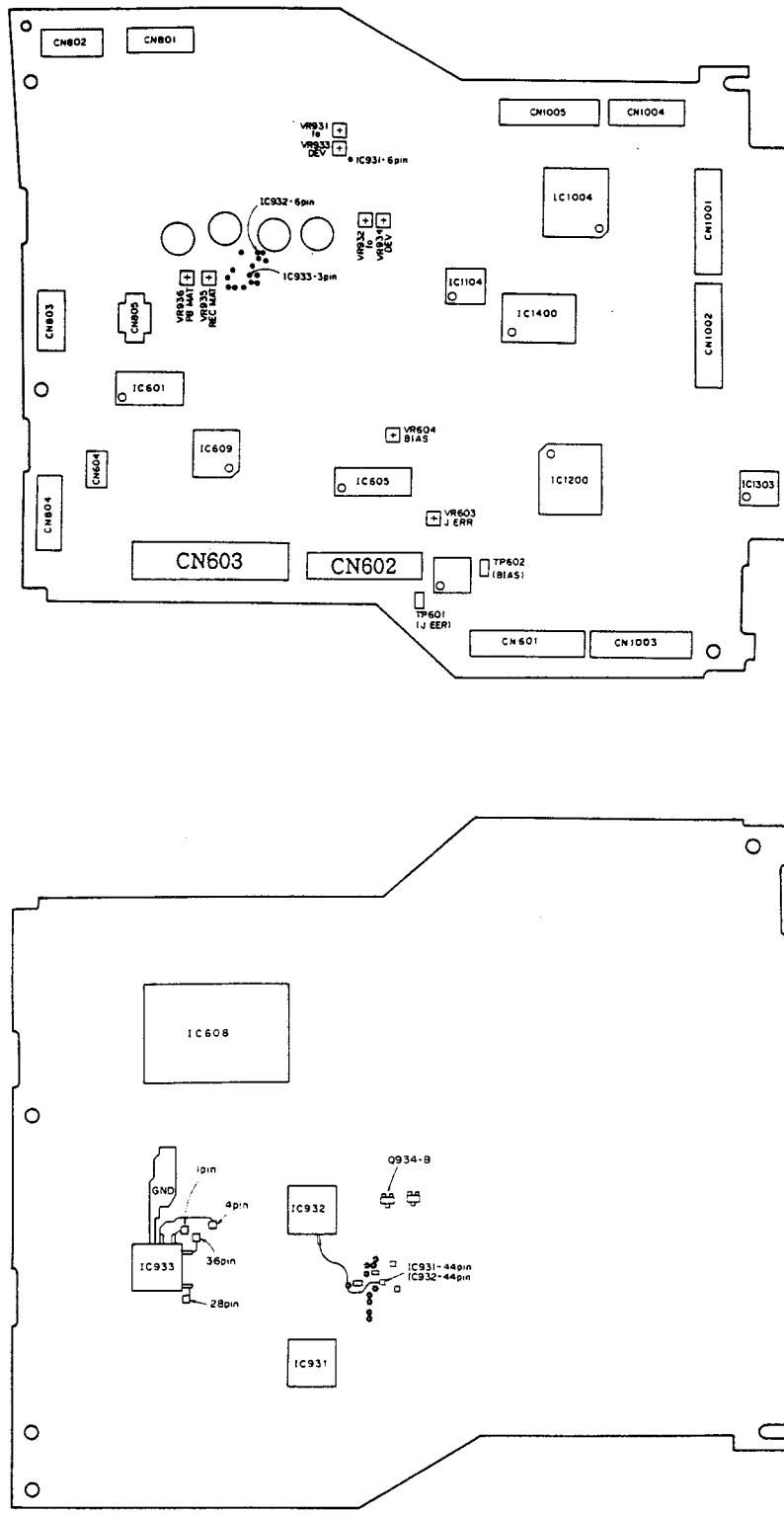


Fig. II-82

9. Mechanical Adjustments of Recorder Section

Mechanical adjustments of the recorder section must be made under the settings (Type Ⅰ and Ⅱ) shown in Figure Ⅱ－83.

Type Ⅰ :
To adjust the PB RF signal, check the pin 21 of CN601 on the APS P.C.B.
To adjust the switching pulse, check the pin 7 of CN1003 on the APS P.C.B.

Type Ⅱ :
To adjust the PB RF signal, check the pin 5 of CN058 (service connector).
To adjust the switching pulse, check the pin 7 of CN058 (service connector).

Tracking can be shifted in the service mode 3.

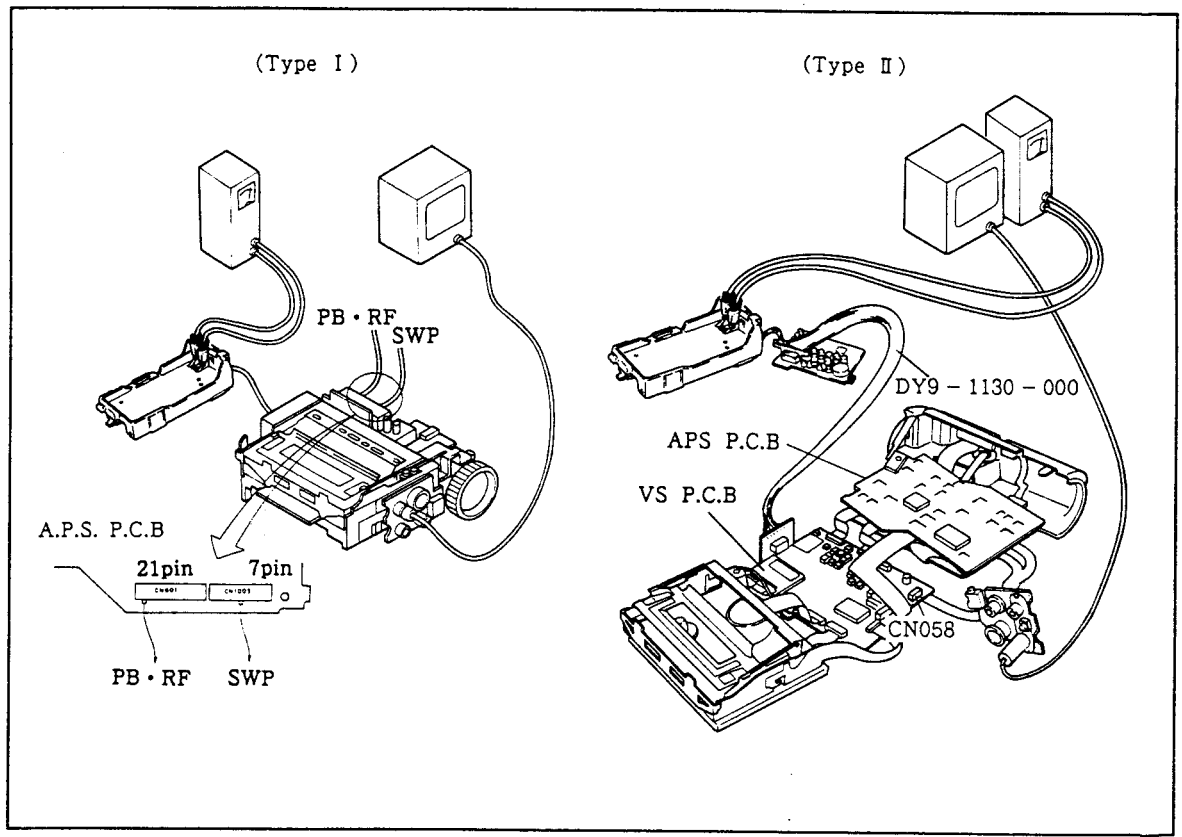


Fig. Ⅱ-83

10. EVF Adjustments

10-1. Free-run Frequency Adjustment

SIGNAL	No signal (Open terminal)
MODE	LINE IN
M.EQ.	Oscilloscope and frequency counter
TP/TRIG.	EVF PCB TP2916(HD)
ADJ.	EVF PCB TP2902(H.PHASE)
SPEC.	16.2 ± 0.2KHz

10-2. Vertical Amplitude Adjustment

SIGNAL	Circular object
MODE	EE
M.EQ.	EVF and monitor TV
ADJ.	EVF PCB TP2901 (V − SIZE)
SPEC.	There must be congruity between the pictures displayed on the EVF and monitoring TV.

Procedure:

1. Shoot a circular object (sufficient to allow identification of vertical distortion of its picture). Adjust a field of view so that the object may come into full view on the screen.
2. Adjust the VR2901 (V-SIZE) so that there must be no discord between the pictures displayed on the EVF and monitoring TV set.

10-3. Rotation and Centering

MODE	EE
M.EQ.	EVF
ADJ.	Deflection yoke and centering magnet
SPEC.	The screen must be centered without tilt.

Procedure:

1. Shoot an object (sufficient to allow identification of the inclination and center of the screen).
2. Loosen the clamping ring to such a degree as to allow turning of the deflection yoke.
3. Turn the deflection yoke to correct the inclination of the screen.

Note: Turn the deflection yoke to a such degree as to allow movement of the centering magnet.

4. Move the centering magnet to center the screen.
5. Tighten the fastening ring completely.

Note: Take care not to tighten the clamping ring excessively.

6. Fix the centering magnet by coating it with such materials as paint (at two opposite positions).

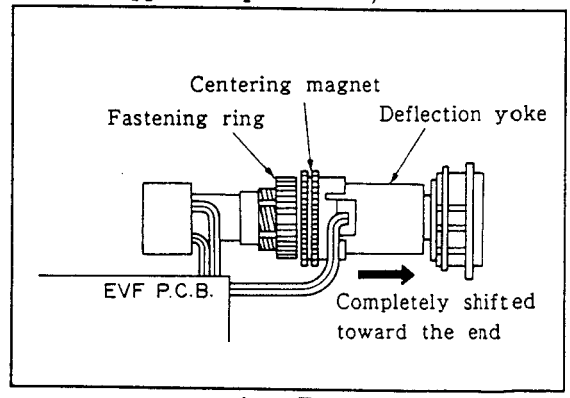


Fig. II-84

10-4. Brightness Adjustment

Note: This adjustment can be made without disassembling the EVF.

SIGNAL	Self-recording tape (gray scale)
MODE	PLAY
M.EQ.	EVF
ADJ.	EVF PCB VR2904 (BRIGHT)
SPEC.	Up to 11 steps of the gray scale must be identified.

10-5. Focus Adjustment

Note: This adjustment can be made without disassembling the EVF.

MODE	Lens – capped (character display) mode
M.EQ.	EVF
ADJ.	EVF PCB VR2903 (FOCUS)
SPEC.	EVF characters must be focused under the optimum condition.

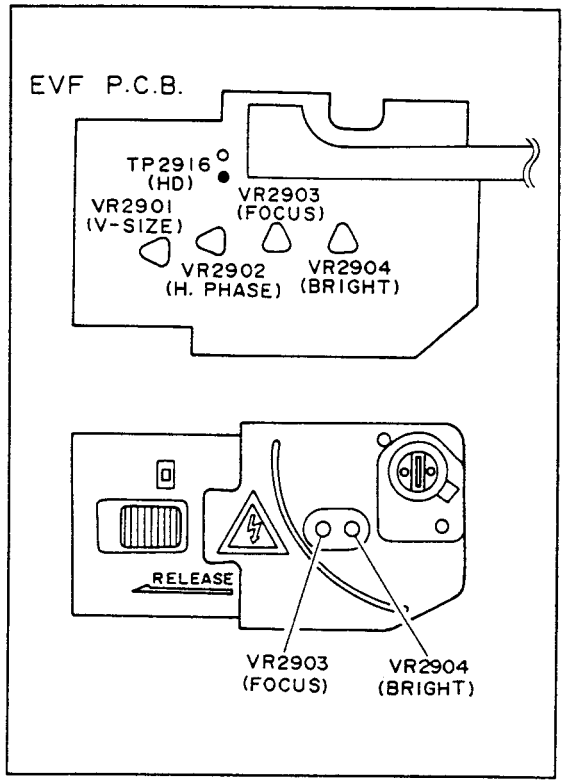


Fig. II-85

11. Adjustments after Replacement of Main Parts

Replacement of any main part must be followed by at least the adjustments listed in the table below. Note that some other adjustments may be necessitated by replacement of more than one main part or development of certain faults.

Adjustment : ○ Confirmation : △

No.	Necessary adjustments / Main part name	CCD	LENS ASSY	AF ASSY	SENSOR ASSY	APS PCB	CAMERA MI-COM	MAIN MI-COM	VS PCB	SERVO MI-COM	POWER SUPPLY PCB	UPPER DRUM	EVF
6-1	CZ adjustment	○	○	○									
7-1	Clock frequency adjustment				△								
7-2	CG gate pulse adjustment	○			○	○	○						
7-3	DM PLL adjustment				○	○	○						
7-4	SG PLL adjustment				△								
7-5	V_{SUB} voltage adjustment	○			○	○	○						
7-6	Iris encoder adjustment				○	○	○						
7-7	Automatic iris adjustment	○			○	○	○						
7-8	Automatic gain control (AGC)	○			○	○	○						
7-9	Black adjustment	○			○	○	○						
7-10	Y1 gain adjustment	○			○	○	○						
7-11	Y2 gain adjustment	○			○	○	○						
7-12	SYNC level adjustment	○			○	○	○						
7-13	Setup level adjustment	○			○	○	○						
7-14	White clip level adjustment	○			○	○	○						
7-15	Y level adjustment	○			○	○	○						
7-16	C level adjustment	○			○	○	○						
7-17	C1 gain adjustment	○			○	○	○						
7-18	Carrier balance R − Y adjustment	○			○	○	○						
7-19	Carrier balance B − Y adjustment	○			○	○	○						
7-20	R gain adjustment	○			○	○	○						
7-21	B gain adjustment	○			○	○	○						
7-22	Burst level adjustment	△			○	○	○						
7-23	Color balance adjustment	○			○	○	○						
7-24	White balance (1) adjustment	○			○	○	○						
7-25	White balance (2) adjustment	○			○	○	○						
7-26	3200°K white balance reference adjustment	○			○	○	○						
7-27	5600°K white balance reference adjustment	○			○	○	○						
7-28	5600°K white balance set adjustment	○			○	○	○						

UC1HiE only : *

Adjustment : ○ Confirmation : △

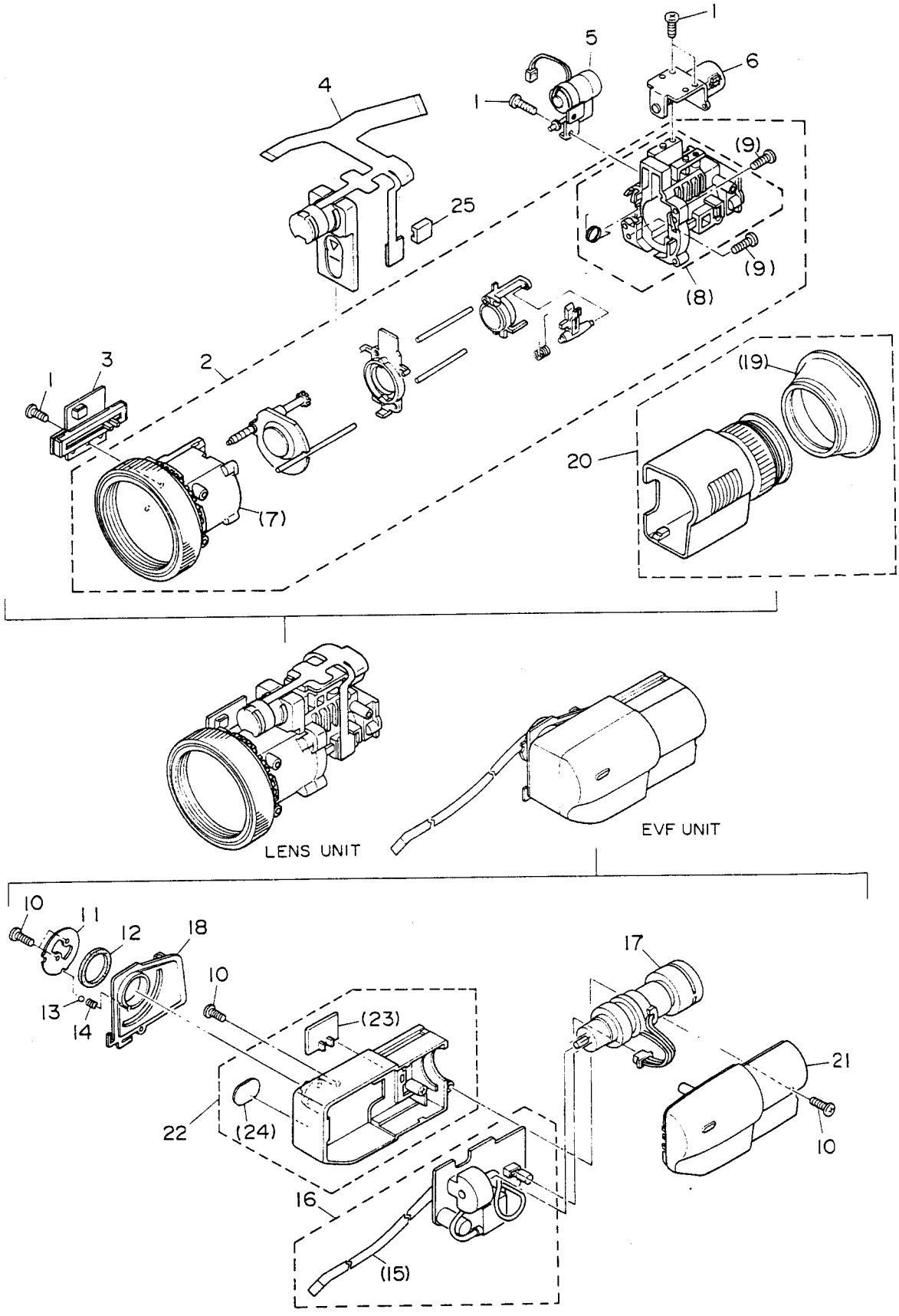
No.	Necessary adjustments / Main part name	CCD	LENS ASSY	AF ASSY	SENSOR ASSY	APS PCB	CAMERA MI – COM	MAIN MI – COM	VS PCB	SERVO MI – COM	POWER SUPPLY PCB	UPPER DRUM	EVF
8-1	Switching frequency adjustment										△		
8-2	+15.5V signal adjustment										△		
8-3	VIDEO 5V signal adjustment										△		
8-4	CAMERA 5V signal adjustment										△		
8-5	Undercut adjustment					○	○						
8-6	Switching point adjustment								△				
8-7	Jitter error bias adjustment					△							
8-8	Capstan FG offset adjustment								△				
8-9	Jitter error correction					△							
8-10	Video automatic gain control (AGC)								△				
8-11	REC Y level adjustment								△				
8-12	Y/C separation adjustment								△				
8-13	YFM carrier (normal) adjustment								△				
8-14	YFM deviation (normal) adjustment								△				
8-15*	YFM carrier (Hi8) adjustment								△				
8-16*	YFM deviation (Hi8) adjustment								△				
8-17	Recording current Y adjustment								△			○	
8-18	Recording current A adjustment								△			○	
8-19	Recording current ATF adjustment								△			○	
8-20	Recording current C adjustment								△			○	
8-21	Deemphasis Y level adjustment								△				
8-22	PBY level adjustment								△				
8-23*	PB peaking adjustment								△				
8-24	Character generator character position adjustment								△				
8-25	JOG chromirance phase adjustment								△				
8-26	REC matrix adjustment					△							
8-27	PB matrix adjustment					△							
8-28	Carrier adjustment					△							
8-29	Deviation adjustment					△							
10-1	Free-running frequency adjustment												△
10-2	Vertical amplitude adjustment												△
10-3	Rotation and centering												△
10-4	Brightness adjustment												△
10-5	Focus adjustment												△

CONTENTS

1. ESPECIALLY CRITICAL PARTS IN THE POWER CIRCUIT BLOCK SHOULD NOT BE REPLACED WITH OTHER MARKS.
   CRITICAL PARTS ARE MARKED WITH ⚠ IN THIS ELECTRICAL PARTS LIST.

2. THE NUMBERS INDICATED ON THE CONNECTORS DO NOT CORRESPOND TO THE SYMBOL NUMBERS.
   PLEASE CHECK THE CORRECT SYMBOL NUMBERS OF THE CONNECTORS ON THE INTERCONNECTION SCHEMATIC DIAGRAM.

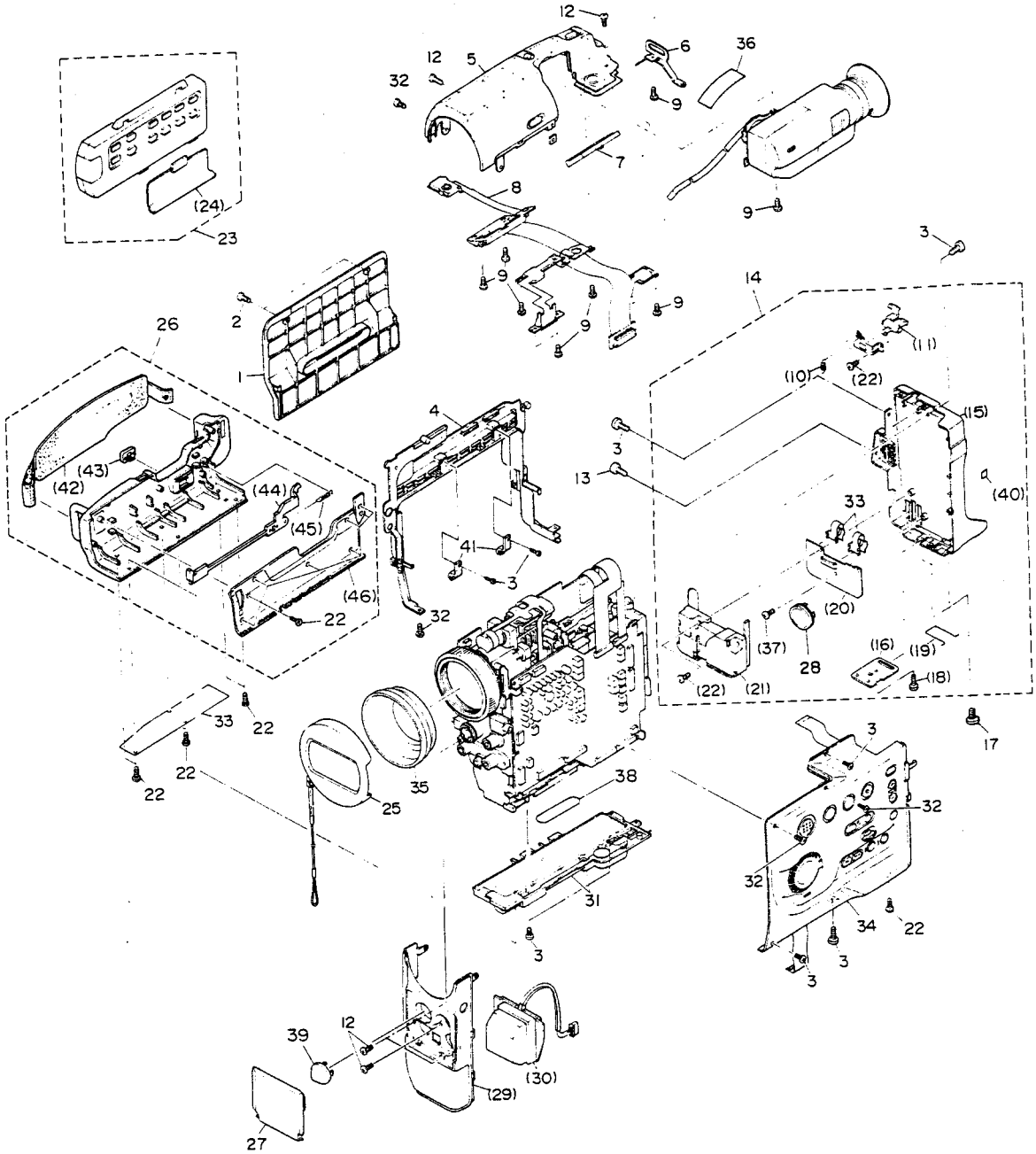
LENS/EVF UNIT Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	XA4-4170-457 000	F	4	SCREW	
2	DY1-7250-000 000	C	1	ZOOM LENS ASS'Y	
3	YG9-5185-000 000	C	1	POTENTION METER UNIT	
4	YH8-0029-000 000	C	1	IG METER UNIT	
5	YH7-0045-000 000	C	1	PZ MOTOR	
6	YH7-0046-000 000	C	1	STEPPING MOTOR	
7	DY1-7251-000 000	C	1	FRONT LENS ASS'Y	
8	DY1-7252-000 000	C	1	RELAY HOLDER UNIT	
9	XA4-9170-807 000	F	2	SCREW	
10	XA4-9170-509 000	F	4	SCREW	
11	DA1-5209-000 000	C	1	PLATE, EVF	
12	DA1-5208-000 000	C	1	RING, RUBBER	
13	XG8-1100-582 000	C	1	STEEL BALL	
14	DS1-5255-000 000	C	1	SPRING, COIL	
15	DH2-1562-000 000	C	1	PRINTED CODE	
16	DG1-1906-000 000	C	1	EVF P.C.B. ASS'Y	
17	DG1-1752-000 000	C	1	CRT ASS'Y	
18	DA1-5207-000 000	B	1	EVF HOLDER	
19	DA1-5099-000 000	B	1	EVF CUP	
20	DG1-1751-000 000	B	1	FINDER ASS'Y	
21	DY1-7246-000 000	B	1	RIGHT COVER ASS'Y, EVF	
22	DY1-7247-000 000	B	1	LEFT COVER ASS'Y, EVF	
23	DA1-4243-000 000	B	1	SEAL	
24	DA1-5088-000 000	B	1	KNOB, RELEASE	
25	WG8-5043-000 000	B	1	SWITCH, RESET	

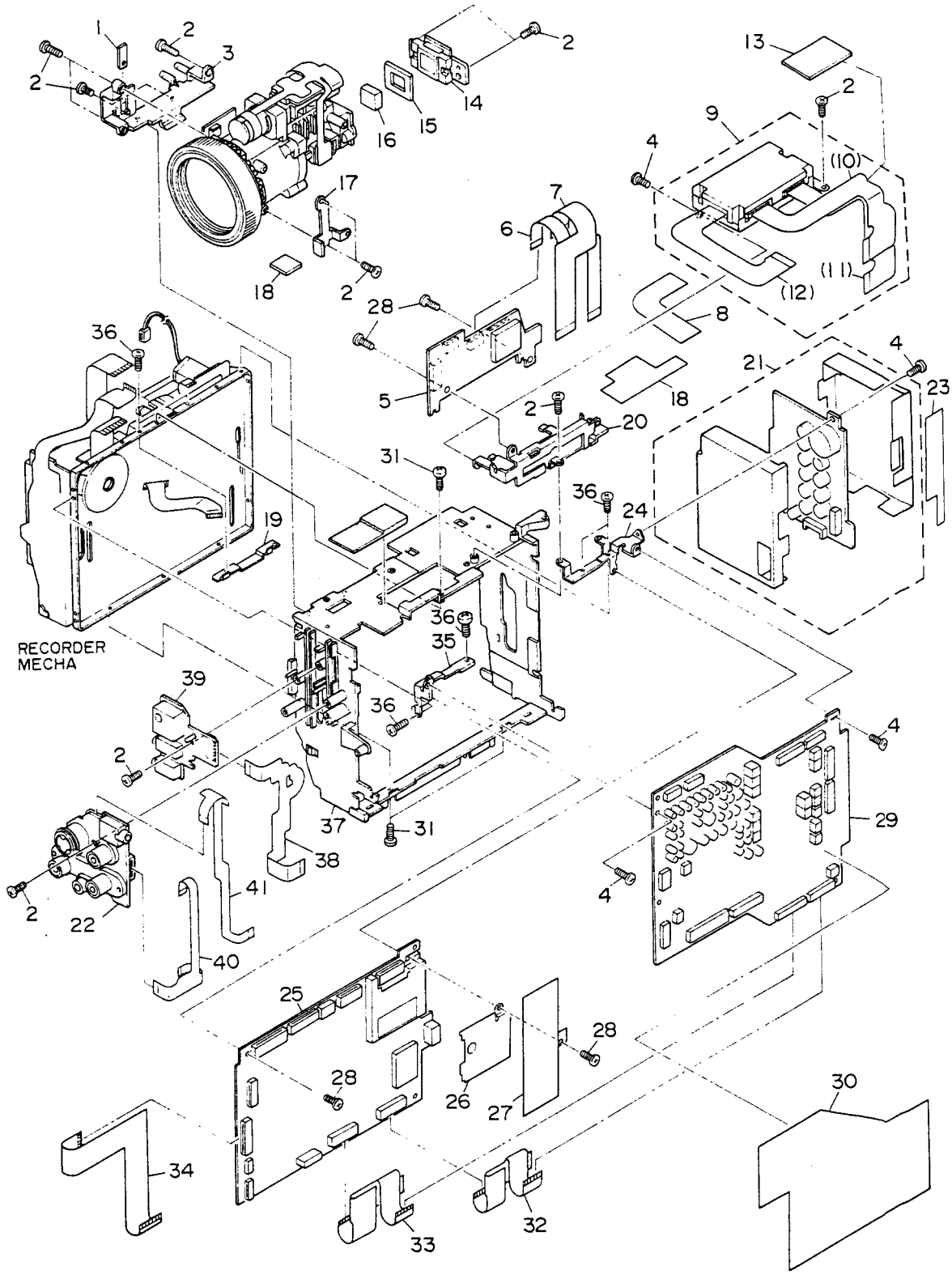
Casing Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY1-7275-000 000	B	1	COVER, CASSETTE	UC1HiE ONLY
	DY1-7297-000 000	B	1	COVER, CASSETTE	UC20E ONLY
2	XA1-7140-309 000	F	2	SCREW	
3	XA4-9170-459 000	F	9	SCREW	
4	DG1-1913-000 000	B	1	LEFT COVER UNIT	
5	DY1-7316-000 000	B	1	TOP COVER ASS'Y	UC1HiE ONLY
	DY1-7267-000 000	B	1	TOP COVER ASS'Y	UC20E ONLY
6	DA1-5218-000 000	C	1	BAR, STRAP ATTACHMENT	
7	DA1-5077-000 000	B	1	KNOB, TELE/WIDE	
8	DG1-1882-000 000	C	1	KEY2 ASS'Y	
9	XA9-0580-000 000	F	9	SCREW	
10	DS1-5256-000 000	C	1	SPRING, COIL	
11	DA1-5056-000 000	B	1	KNOB, BATTERY EJECT	
12	XA4-9170-609 000	F	5	SCREW	
13	XA1-1170-259 000	F	1	SCREW	
14	DG1-1916-000 000	B	1	REAR COVER UNIT	
15	DY1-7243-000 000	B	1	REAR COVER ASS'Y	
16	DA1-5168-000 000	C	1	BAR, STRAP ATTACHMENT	
17	XA1-7170-459 000	F	2	SCREW	
18	XA1-7170-309 000	F	1	SCREW	
19	DA1-5178-000 000	C	1	REAR STAND	
20	DG1-1883-000 000	C	1	FUSE BATTERY P.C.B. ASS'Y	
21	DA1-5163-000 000	B	1	COVER, FUSE BATTERY	
22	XA4-9170-409 000	F	18	SCREW	
23	DY1-7215-000 000	B	1	WIRELESS CONTROLLER WL-1	
24	DY4-4383-000 000	B	1	COVER, BATTERY	
25	DG1-1909-000 000	B	1	CAP, LENS	
26	DG1-1924-000 000	B	1	GRIP COVER	
27	DG1-1918-000 000	B	1	JACK COVER UNIT	UC1HiE ONLY
	DG1-2030-000 000	B	1	JACK COVER UNIT	UC20E ONLY
28	DH9-0554-000 000	B	1	LITHIUM BATTERY	
29	DY1-7244-000 000	B	1	FRONT COVER ASS'Y	
30	DH9-0573-000 000	C	1	MIC ASS'Y	
31	DG1-1915-000 000	B	1	BOTTOM COVER UNIT	
32	XA1-7170-359 000	F	4	SCREW	
33	DA1-5064-000 000	B	1	TERMINAL BATTERY	
34	DG1-1922-000 000	B	1	RIGHT COVER UNIT	
35	DA1-5157-000 000	B	1	HOOD, LENS	
36	DA1-5222-000 000	C	1	SHEET, STRAP	
37	XA4-9170-309 000	F	1	SCREW	
38	DA1-5223-000 000	B	1	SEAL, BOTTOM COVER	
39	DA1-5508-000 000	B	1	CAP, FRONT COVER	UC20E ONLY
40	DA1-5433-000 000	B	1	SEAL, REAR COVER	
41	DA1-5070-000 000	B	2	HOLDER, WL-1	
42	DA1-5202-000 000	B	1	STRAP, HAND	
43	DA1-5193-000 000	B	1	KNOB, RELEASE	
44	DA1-5192-000 000	B	1	HOOK, BOTTOM	
45	DS1-5244-000 000	B	1	SPRING, COIL	
46	DA1-5194-000 000	B	1	PLATE, BOTTOM COVER	

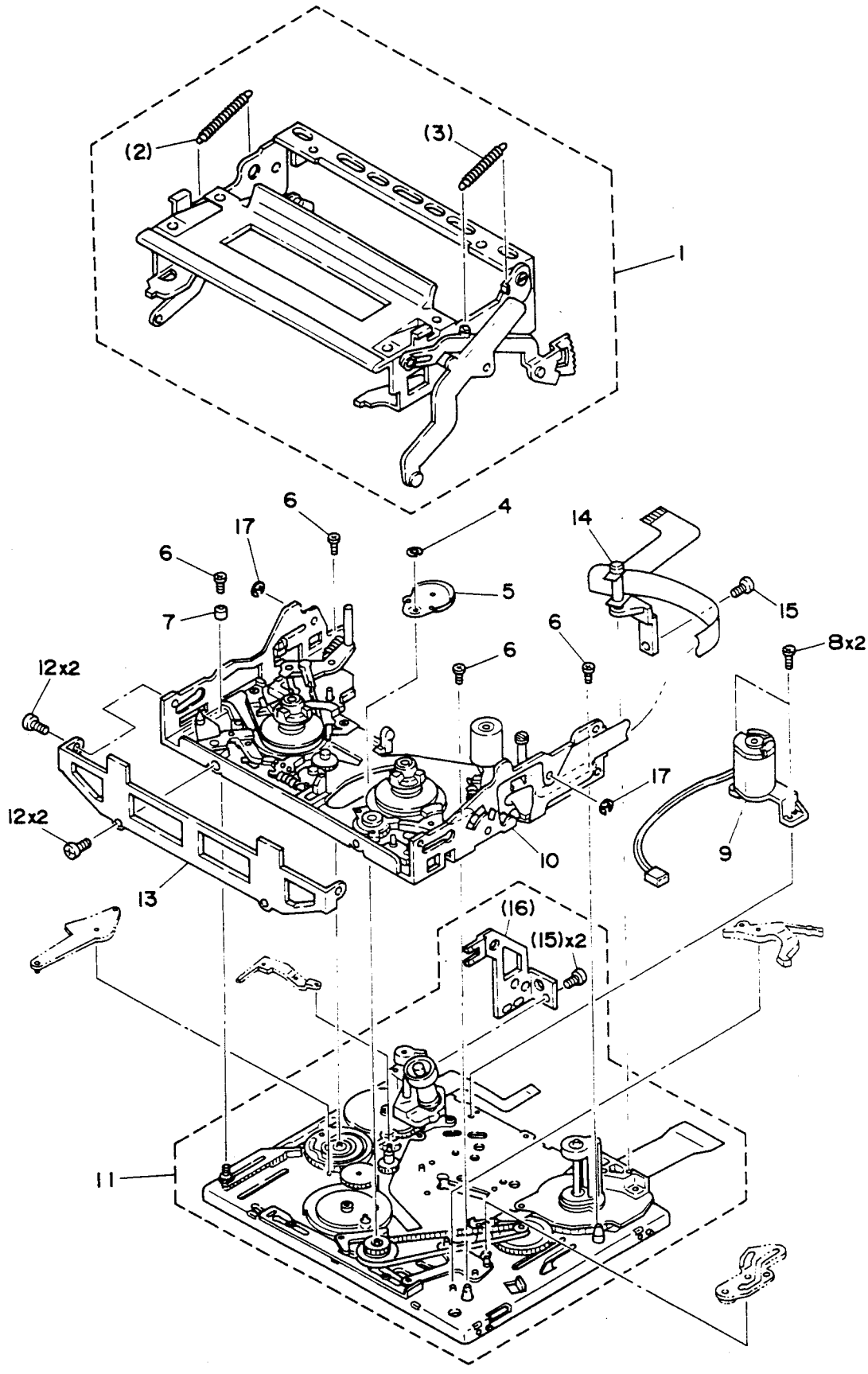
Camera/Recorder Unit Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-5139-000 000	C	1	PLATE	
2	XA4-9170-459 000	F	13	SCREW	
3	DA1-5134-000 000	C	1	HOLDER, LENS	
4	XA1-7170-207 000	F	4	SCREW	
5	DG1-1903-000 000	C	1	AF P.C.B.	
6	DH2-1557-000 000	C	1	PRINTED CODE	
7	DH2-1558-000 000	C	1	PRINTED CODE	
8	DA1-5143-000 000	C	1	SHIELD SHEET, CCD	
9	DG1-2059-000 000	C	1	SENSOR MODULE	
10	DY4-3002-000 000	C	1	PRINTED CODE	
11	DY4-3003-000 000	C	1	PRINTED CODE	
12	DH2-1615-000 000	C	1	PRINTED CODE	
13	DA1-5564-000 000	C	1	SHEET, SPONGE	UC1HiE ONLY
14	DY1-7308-000 000	C	1	CCD ASS'Y	
15	DA1-4720-000 000	C	1	RUBBER, CCD	
16	DH9-0603-000 000	C	1	CRYSTAL FILTER	
17	DA1-5140-000 000	C	1	PLATE	
18	DA1-5144-000 000	C	1	SEALD SHEET	
19	DA1-5138-000 000	C	1	PLATE, RECORDER	
20	DA1-5135-000 000	C	1	HOLDER, P.C.B.	
21	DG1-2061-000 000	C	1	POWER SUPPLY MODULE	
22	DG1-1885-000 000	C	1	TERMINAL P.C.B. ASS'Y	UC1HiE ONLY
	DG1-1894-000 000	C	1	TERMINAL P.C.B. ASS'Y	UC20E ONLY
23	DA1-5146-000 000	C	1	SHEET	
24	DA1-5141-000 000	C	1	HOLDER (B), RECORDER	
25	DG1-1888-000 000	C	1	VS P.C.B. ASS'Y	UC1HiE ONLY
	DG1-1893-000 000	C	1	VS P.C.B. ASS'Y	UC20E ONLY
26	DA1-5128-000 000	C	1	SHIELD SHEET	
27	DA1-5142-000 000	C	1	SHIELD SHEET	
28	XA1-7170-307 000	F	4	SCREW	
29	DG1-1904-000 000	C	1	APS P.C.B. ASS'Y	UC1HiE ONLY
	DG1-1891-000 000	C	1	APS P.C.B. ASS'Y	UC20E ONLY
30	DA1-5145-000 000	C	1	SEALD SHEET	
31	XA9-0549-000 000	F	3	SCREW	
32	DH2-1553-000 000	C	1	PRINTED CODE	
33	DH2-1552-000 000	C	1	PRINTED CODE	
34	DH2-1551-000 000	C	1	PRINTED CODE	
35	DA1-5136-000 000	C	1	HOLDER (A), RECORDER	
36	XA1-7140-257 000	F	4	SCREW	
37	DY1-7245-000 000	C	1	HOLDER UNIT, RECORDER	
38	DH2-1554-000 000	C	1	PRINTED CODE	
39	DG1-1884-000 000	C	1	HEAD PHONE P.C.B.	
40	DH2-1555-000 000	C	1	PRINTED CODE	
41	DH2-1556-000 000	C	1	PRINTED CODE	

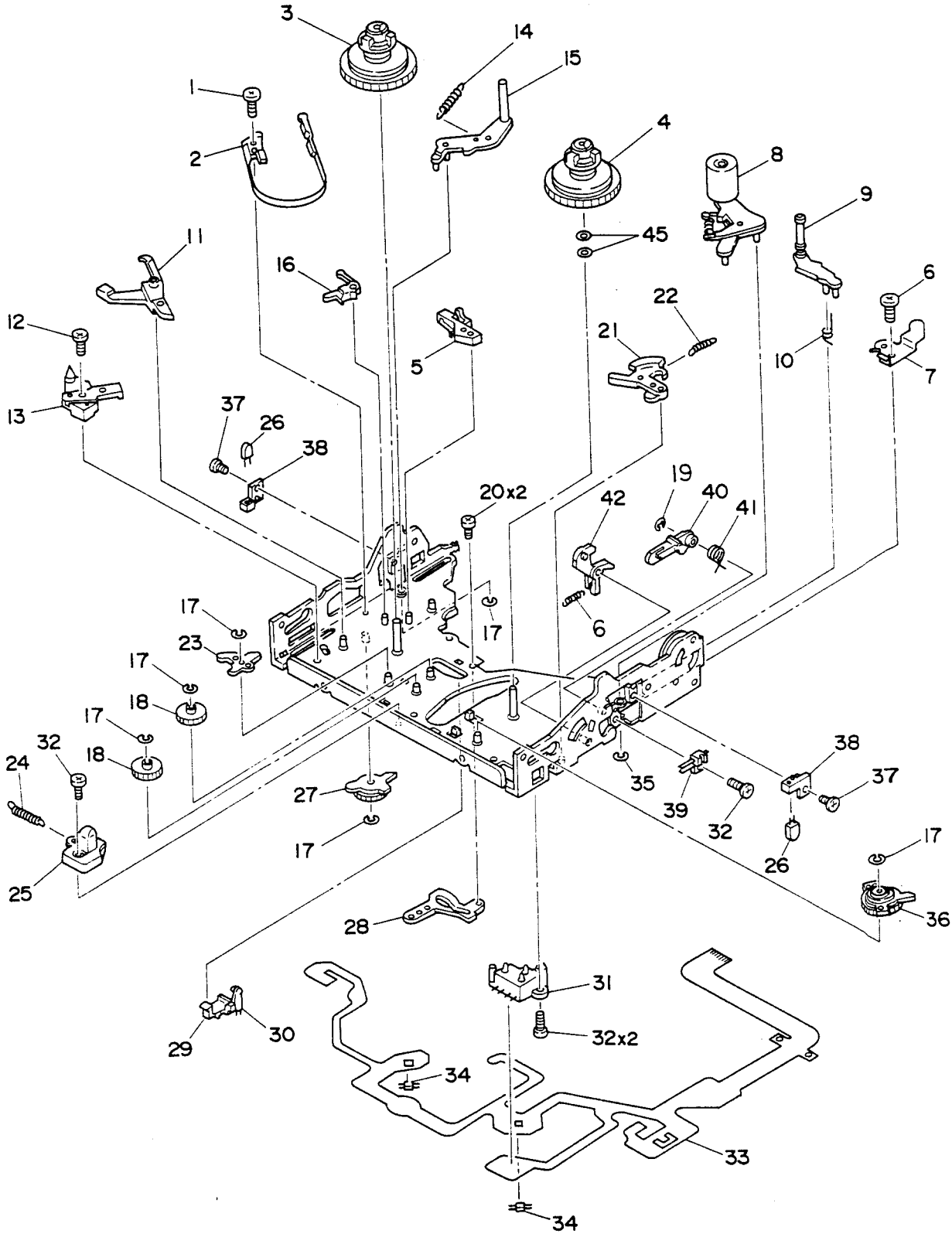
Mechanical Chassis Section 1



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DG1-1945-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
2	DS1-5250-000 000	C	1	SPRING, COIL	
3	DS1-5251-000 000	C	1	SPRING, COIL	
4	DA1-3312-000 000	F	1	WASHER	
5	DG1-0984-000 000	C	1	IDLER ASS'Y	
6	DA1-5302-000 000	F	4	SCREW	
7	DA1-5291-000 000	C	1	ROLLER	
8	XA1-7140-357 000	F	2	SCREW	
9	DG1-0996-000 000	C	1	MOTOR, M	
10	DY1-7212-000 000	C	1	S CHASSIS ASS'Y	
11	DY1-7213-000 000	C	1	M CHASSIS ASS'Y	
12	XA1-7140-229 000	F	4	SCREW	
13	DA1-5293-000 000	C	1	FRAME	
14	DA1-5292-000 000	C	1	GUIDE, PRINTED CORD	
15	XA1-7140-257 000	F	3	SCREW	
16	DA1-5298-000 000	C	1	PLATE, CATCHING	
17	XD2-1100-132 000	F	2	E RING	

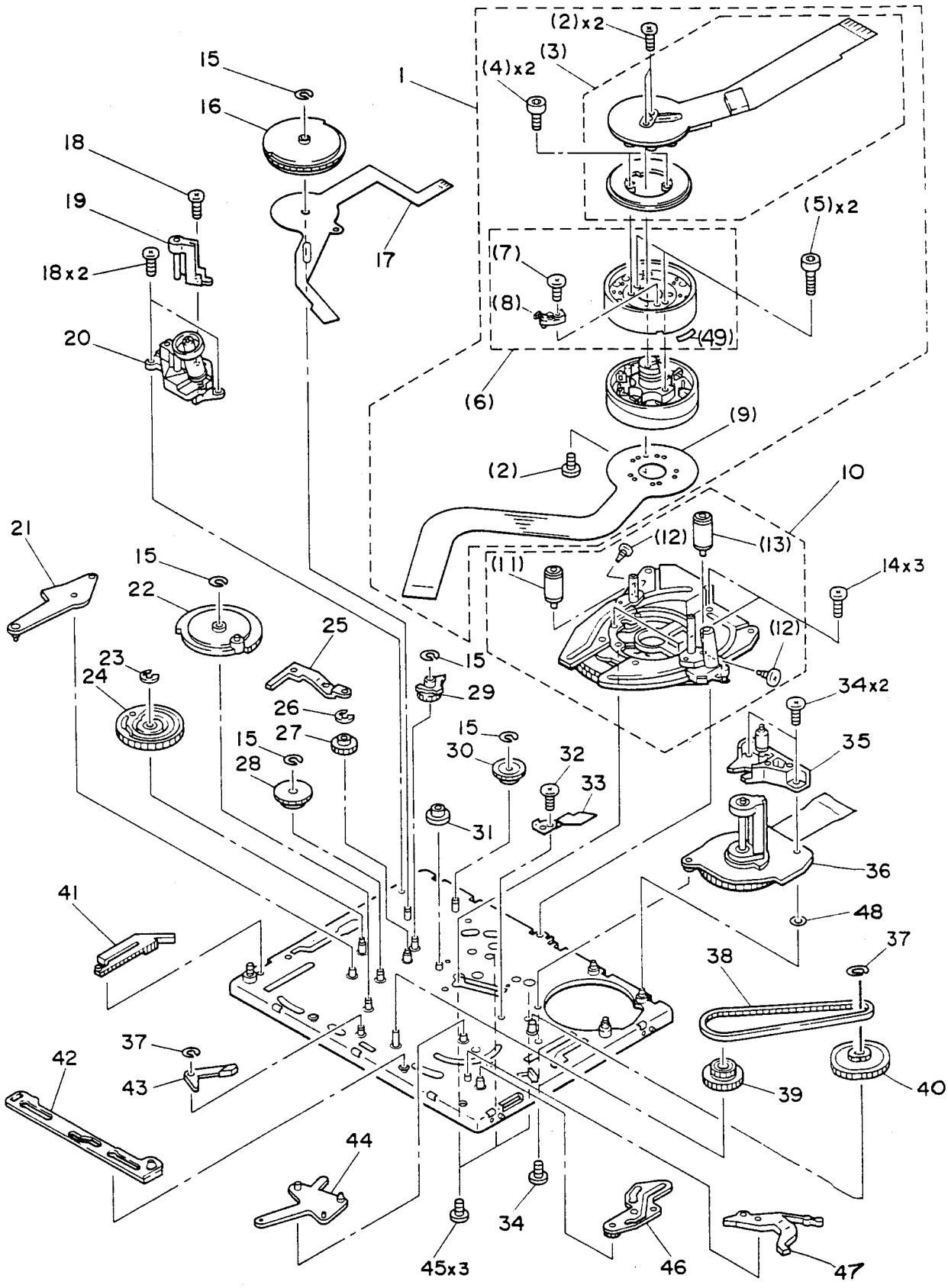
Mechanical Chassis Section 2



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-3323-000 000	F	1	SCREW	
2	DG1-1949-000 000	C	1	TENSION BAND ASS'Y	
3	DG1-2074-000 000	C	1	REEL SUPPLY	
4	DG1-2075-000 000	C	1	REEL, TAKE UP	
5	DF1-0646-000 000	C	1	LEVER, STOP	
6	DS1-5253-000 000	C	1	SPRING, COIL	
7	DA1-5288-000 000	C	1	STOPPER, P12 ARM	
8	DG1-0989-000 000	C	1	PINCH ROLLER ASS'Y	
9	DG1-0990-000 000	C	1	ARM, P12	
10	DS1-6070-000 000	C	1	SPRING, COIL	
11	DA1-5289-000 000	C	1	DRIVE LEVER, RL	
12	XA1-7140-357 000	F	1	SCREW	
13	DA1-5290-000 000	C	1	PIN	
14	DS1-5254-000 000	C	1	SPRING, COIL	
15	DG1-0992-000 000	C	1	TENSION ARM ASS'Y	
16	DA1-3163-000 000	C	1	LOCK LEVER, S	
17	DA1-3312-000 000	F	6	WASHER	
18	DA1-3156-000 000	C	2	GEAR	
19	XD2-1100-132 000	F	1	E RING	
20	DA1-3106-000 000	F	2	SCREW	
21	DA1-5287-000 000	C	1	LEVER, TB	
22	DS1-5216-000 000	C	1	SPRING, COIL	
23	DA1-3166-000 000	C	1	BRAKE, LOADING	
24	DS1-5252-000 000	C	1	SPRING, COIL	
25	DA1-5286-000 000	C	1	RELEASE, RL	
26	DH9-0508-000 000	B	2	PHOTO TRANSISTOR PT4850F	
27	DG1-0985-000 000	C	1	LIMITTER, SLB	
28	DA1-3192-000 000	C	1	PLATE, SLIDE	
29	DA1-3170-000 000	C	1	HOLDER, LED	
30	DH9-0470-000 000	B	1	LED GL452	
31	DH9-0468-000 000	C	1	SWITCH, PUSH	
32	XA1-7140-307 000	F	3	SCREW	
33	DH2-1602-000 000	C	1	PRINTED CODE, S CHASSIS	
34	DH9-0469-000 000	B	2	PHOTO REFLECTOR	
35	DA1-3313-000 000	F	1	WASHER	
36	DG1-0986-000 000	C	1	BRAKE, TB	
37	XA1-7140-229 000	F	1	SCREW	
38	DA1-5285-000 000	C	2	HOLDER, SENSOR	
39	DH9-0509-000 000	C	1	SWITCH	
40	DA1-5296-000 000	C	1	LEVER, DOWN	
41	DS1-6081-000 000	C	1	SPRING, COIL	
42	DA1-5284-000 000	C	1	LEVER, LOCK	

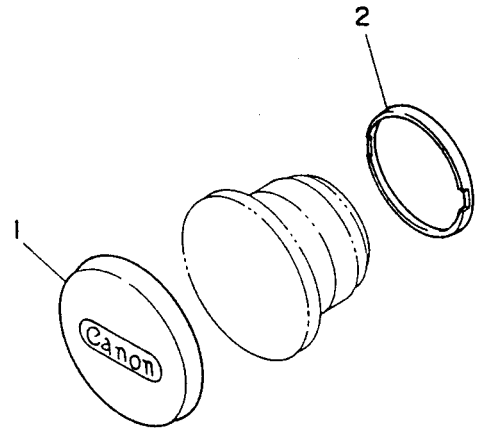
Mechanical Chassis Section 3



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY1-7310-000 000	E	1	DRUM ASS'Y	UC1HiE ONLY
	DY1-7269-000 000	E	1	DRUM ASS'Y	UC20E ONLY
2	XA1-1140-167 000	F	3	SCREW	
3	DY2-1409-000 000	C	1	MOTOR, DRUM	
4	DA1-3316-000 000	F	2	SCREW	
5	DA1-3317-000 000	F	2	SCREW	
6	DY1-7309-000 000	E	1	UPPER DRUM ASS'Y	UC1HiE ONLY
	DY1-7268-000 000	E	1	UPPER DRUM ASS'Y	UC20E ONLY
7	DA1-3315-000 000	F	1	SCREW	
8	DF1-0607-000 000	C	1	EARTH	
9	DH2-1220-000 000	C	1	E.P.C., DRUM	
10	DG1-0979-000 000	C	1	LOADING ASS'Y	
11	DF1-0629-000 000	C	1	P5 POST ASS'Y	
12	DA1-3265-000 000	F	2	SCREW	
13	DF1-0630-000 000	C	1	P9 POST ASS'Y	
14	XA1-1140-307 000	F	3	SCREW	
15	DA1-3313-000 000	F	5	WASHER	
16	DF1-0621-000 000	C	1	GEAR, MS	
17	DH2-1601-000 000	C	1	PRINTED CORD, M CHASSIS	
18	XA1-7140-357 000	F	3	SCREW	
19	DF1-0633-000 000	C	1	P2 BASE ASS'Y	
20	DG1-1014-000 000	C	1	P4 BASE ASS'Y	
21	DA1-3195-000 000	C	1	LEVER, MODE (1)	
22	DF1-0622-000 000	C	1	GEAR, SLIDE	
23	XD2-1100-172 000	F	1	E RING	
24	DA1-3152-000 000	C	1	GEAR, CAM	
25	DA1-3168-000 000	C	1	S MODE LEVER	
26	XD2-1100-102 000	F	1	E RING	
27	DA1-3151-000 000	C	1	GEAR	
28	DA1-3154-000 000	C	1	GEAR, SL	
29	DA1-3153-000 000	C	1	GEAR	
30	DA1-3155-000 000	C	1	GEAR	
31	DA1-3318-000 000	C	1	ROLLER	
32	XA1-7140-147 000	F	1	SCREW	
33	DA1-3266-000 000	C	1	PLATE, GUIDE	
34	XA1-7140-257 000	F	3	SCREW	
35	DY2-1400-000 000	C	1	P10 UNIT	
36	DG1-0997-000 000	C	1	CAPSTAN MOTOR	
37	DA1-3312-000 000	F	2	WASHER	
38	DA1-3148-000 000	C	1	BELT, CAPSTAN	
39	DF1-0626-000 000	C	1	GEAR, DRIVE	
40	DF1-0625-000 000	C	1	GEAR, CAPSTAN	
41	DA1-3161-000 000	C	1	RACK, SL	
42	DA1-3190-000 000	C	1	LEVER, MODE (2)	
43	DA1-3167-000 000	C	1	LEVER, NEUTRAL	
44	DA1-3196-000 000	C	1	LEVER, T MODE	
45	XA1-1140-259 000	F	3	SCREW	
46	DF1-1172-000 000	C	1	LEVER, PINCH	
47	DA1-3165-000 000	C	1	LEVER, EJECT	
48	XD1-1102-111 000	F	1	WASHER	
49	DA1-3065-000 000	C	1	TAB, RETAINER	
50	DA1-5454-000 000	C	2	DAMPER	

Accessory Parts Section



WD-37,TL-37

MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY3-4201-000 000	C	1	CAP, LENS	
2	DY3-4209-000 000	C	1	CAP DUST (WD-37)	
	DY3-4210-000 000	C	1	CAP DUST (TL-37)	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
C2911	VC7-1730-106 000	D	1	CAPACITOR, ELEC. 10uF/16V	
C2912	VC7-1430-472 000	D	1	CAPACITOR, CERA, 4700pF/125V	
C2915	VC7-1360-102 000	D	1	CAPACITOR, CERA, 1000pF/1kV	
C2917	VC7-1380-152 000	D	1	CAPACITOR, CERA, 1500pF/500V	
CN001	VS1-5269-028 000	C	1	CONNECTOR 28P	
CN002	VS1-5138-008 000	C	1	CONNECTOR 8P	
CN3	VS1-5054-008 000	C	1	CONNECTOR 8P	
CN051	VS1-5051-006 000	C	1	CONNECTOR 6P	
CN052	VS1-5256-016 000	C	1	CONNECTOR 16P	
CN053	VS1-5190-002 000	C	1	CONNECTOR 2P	
CN054	VS1-5267-028 000	C	1	CONNECTOR 28P	
CN055	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN056	VS1-5149-015 000	C	1	CONNECTOR 15P	
CN057	VS1-5256-024 000	C	1	CONNECTOR 24P	
CN058	VS1-5269-012 000	C	1	CONNECTOR 12P	
CN059	VS1-5256-024 000	C	1	CONNECTOR 24P	
CN201	VS1-5256-008 000	C	1	CONNECTOR 8P	
CN202	VS1-5347-008 000	C	1	CONNECTOR 8P	
CN203	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN501	VS1-5316-015 000	C	1	CONNECTOR 15P	
CN601	VS1-5256-024 000	C	1	CONNECTOR 24P	
CN602	VS1-5256-024 000	C	1	CONNECTOR 24P	
CN603	VS1-1169-018 000	C	1	CONNECTOR 18P	
CN604	VS1-5269-012 000	C	1	CONNECTOR 12P	
CN801	VS1-5138-006 000	C	1	CONNECTOR 6P	
CN802	VS1-5316-006 000	C	1	CONNECTOR 6P	
CN803	VS1-5316-006 000	C	1	CONNECTOR 6P	
CN804	VS1-5256-012 000	C	1	CONNECTOR 12P	
CN1001	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN1002	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN1003	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN1004	VS1-5256-012 000	C	1	CONNECTOR 12P	
CN1005	VS1-5256-020 000	C	1	CONNECTOR 20P	
CN1501	Y22-2670-000 000	C	1	CONNECTOR 20P	
CN2101	VS1-5256-012 000	C	1	CONNECTOR 12P	
CN2102	WS6-5029-000 000	C	1	JACK CONNECTOR	
CN2103	WS6-5036-000 000	C	1	JACK CONNECTOR	
CN2150	VS1-5256-008 000	C	1	CONNECTOR 8P	
CN2151	DH9-0607-000 000	C	1	PIN JACK	
CN2152	WS6-5007-000 000	C	1	TERMINAL, S	UC1HiE ONLY
CN2153	VS1-5256-012 000	C	1	CONNECTOR 12P	
CN2154	DH9-0574-000 000	C	1	PIN JACK	
CN2155	WS6-5001-000 000	C	1	MIC JACK	
CN2906	VS1-1201-004 000	C	1	CONNECTOR 4P	
D1	WA1-1084-000 000	B	1	DIODE MA110	
D001	Y22-2666-000 000	B	1	DIODE SB0209CP	
D002	WA1-0961-000 000	B	1	DIODE MA112	
D005	WA1-9003-000 000	B	1	DIODE SB0505CP	
D006	WA1-9003-000 000	B	1	DIODE SB0505CP	
D007	WA1-9003-000 000	B	1	DIODE SB0505CP	
D008	Y22-2665-000 000	B	1	DIODE SB0703CP	
D051	WA1-5241-000 000	B	1	DIODE DA227	
D052	WA1-5231-000 000	B	1	DIODE DAP222	
D053	WA1-5231-000 000	B	1	DIODE DAP222	
D201	WA1-5231-000 000	B	1	DIODE DAP222	UC1HiE ONLY
D202	WA1-5122-000 000	B	1	DIODE DAN222	
D203	WA1-5241-000 000	B	1	DIODE DA227	UC1HiE ONLY
D204	WA1-5122-000 000	B	1	DIODE DAN222	
D205	WA1-5231-000 000	B	1	DIODE DAP222	UC1HiE ONLY
D205	WA1-5122-000 000	B	1	DIODE DAN222	UC20E ONLY

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
D206	WA1-5231-000 000	B	1	DIODE DAP222	UC20E ONLY
D207	WA1-5231-000 000	B	1	DIODE DAP222	
D501	WA1-5122-000 000	B	1	DIODE DAN222	
D502	WA1-5122-000 000	B	1	DIODE DAN222	
D503	WA1-5122-000 000	B	1	DIODE DAN222	
D504	WA1-5122-000 000	B	1	DIODE DAN222	
D601	WA1-1146-000 000	B	1	DIODE MA707	
D602	WA1-5231-000 000	B	1	DIODE DAP222	
D604	WA1-5236-000 000	B	1	DIODE DA221	
D605	WA1-5231-000 000	B	1	DIODE DAP222	
D607	WA1-1146-000 000	B	1	DIODE MA707	
D608	WA1-5231-000 000	B	1	DIODE DAP222	
D609	WA1-1146-000 000	B	1	DIODE MA707	
D610	WA1-5231-000 000	B	1	DIODE DAP222	
D702	WA1-5227-000 000	B	1	DIODE 1SS362	
D703	WA1-5227-000 000	B	1	DIODE 1SS362	UC1HiE ONLY
D704	WA1-5122-000 000	B	1	DIODE DAN222	UC1HiE ONLY
D801	WA1-5236-000 000	B	1	DIODE DA221	
D802	WA1-5236-000 000	B	1	DIODE DA221	
D803	WA1-5236-000 000	B	1	DIODE DA221	
D804	WA1-5236-000 000	B	1	DIODE DA221	
D861	WA1-5236-000 000	B	1	DIODE DA221	
D862	WA1-5236-000 000	B	1	DIODE DA221	
D863	WA1-5236-000 000	B	1	DIODE DA221	
D864	WA1-5236-000 000	B	1	DIODE DA221	
D865	WA1-5236-000 000	B	1	DIODE DA221	
D866	WA1-5236-000 000	B	1	DIODE DA221	
D931	WA1-5236-000 000	B	1	DIODE DA221	
D1200	WA1-5092-000 000	B	1	DIODE 1T33C	
D1300	WA1-1084-000 000	B	1	DIODE MA110	
D1301	WA1-1084-000 000	B	1	DIODE MA110	
D1400	WA1-1084-000 000	B	1	DIODE MA110	
D2150	WA1-0989-000 000	B	1	DIODE MA3100W	
D2151	WA1-0989-000 000	B	1	DIODE MA3100W	
D2152	WA1-0989-000 000	B	1	DIODE MA3100W	UC1HiE ONLY
D2153	WA1-0989-000 000	B	1	DIODE MA3100W	UC1HiE ONLY
D2154	WA1-0989-000 000	B	1	DIODE MA3100W	
D2155	WA1-0989-000 000	B	1	DIODE MA3100W	
D2157	WA1-0989-000 000	B	1	DIODE MA3100W	
D2158	WA1-0989-000 000	B	1	DIODE MA3100W	
D2901	WA1-0989-000 000	B	1	DIODE MA3100W	
D2902	WA1-1084-000 000	B	1	DIODE MA110	
D2903	WA1-1084-000 000	B	1	DIODE MA110	
D2904	WA1-1123-000 000	B	1	DIODE AG01Z	
IC1	WA4-5402-000 000	B	1	IC RH5RA35AA	
IC001	WA4-5332-000 000	B	1	IC MB3783	
IC002	WA4-5331-000 000	B	1	IC LM311	
IC051	DH4-0523-000 000	B	1	IC CXP80116-725Q	UC1HiE ONLY
IC051	DH4-0408-000 000	B	1	IC CXP80116-593Q	UC20E ONLY
IC052	WA4-5336-000 000	B	1	IC MPC1720ML2	
IC053	WA4-5480-000 000	B	1	IC LM324	
IC054	DH4-0189-000 000	B	1	IC CXA1127M	
IC055	WA4-5161-000 000	B	1	IC CXA1512M	
IC056	DH4-0318-000 000	B	1	IC CXA1127AM	
IC057	DH4-0135-000 000	B	1	IC CXA1204Q	
IC058	WA4-1145-000 000	B	1	IC RH5VA45AA	
IC201	DH4-0508-000 000	B	1	IC MN1024AF	UC1HiE ONLY
IC201	WA3-5597-000 000	B	1	IC SC0037S08FEL	UC20E ONLY
IC202	WA3-5455-000 000	B	1	IC SC7SU04F	
IC203	DH4-0411-000 000	B	1	IC MM1058XF	UC1HiE ONLY

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
IC205	DH4-0514-000 000	B	1	IC CXA1207AR	
IC206	DH4-0264-000 000	B	1	IC CXA1208R	
IC207	DH4-0297-000 000	B	1	IC CXL1506	
IC208	DH4-0297-000 000	B	1	IC CXL1506	UC1HiE ONLY
IC209	DH4-0372-000 000	B	1	IC uPD6451AGT	
IC210	DH4-0196-000 000	B	1	IC CXA1203N	
IC501	DH4-0200-000 000	B	1	IC CXA1234AR	
IC502	DH4-0200-000 000	B	1	IC CXA1234AR	
IC601	WA3-6112-000 000	B	1	IC RTC-4553A	
IC602	WA4-5422-000 000	B	1	IC S-81350HG	
IC603	WA3-5598-000 000	B	1	IC MC14053BF	
IC604	WA4-5480-000 000	B	1	IC LM324	
IC605	WA4-0907-000 000	B	1	IC BA6303F	
IC606	WA3-6006-000 000	B	1	IC MC14013BF	
IC607	WA4-5164-000 000	B	1	IC UPC393G2	
IC608	DH4-0401-002 000	B	1	IC CXP81316-328Q	
IC609	DH4-0402-000 000	B	1	IC SC402070FB	
IC610	WA4-1145-000 000	B	1	IC RH5VA45AA	
IC611	WA4-5470-000 000	B	1	IC TL1596CDB	
IC701	DH4-0511-000 000	B	1	IC CXD2107M	UC1HiE ONLY
IC801	WA4-0363-000 000	B	1	IC NJM4556M	
IC861	WA4-0509-000 000	B	1	IC NJM2043M	
IC862	WA4-0509-000 000	B	1	IC NJM2043M	
IC863	WA4-0349-000 000	B	1	IC NJM2904M	
IC864	WA3-3175-000 000	B	1	IC BU4066BF	
IC865	WA3-4068-000 000	B	1	IC SC14SU69F	
IC931	WA4-5435-000 000	B	1	IC LA7454W	
IC932	WA4-5435-000 000	B	1	IC LA7454W	
IC933	WA4-5365-000 000	B	1	IC LA7456M	
IC934	WA3-5657-000 000	B	1	IC SC14S70FER	
IC935	WA3-4264-000 000	B	1	IC SC14S66FEL	
IC936	WA3-4264-000 000	B	1	IC SC14S66FEL	
IC1001	WA4-5353-000 000	B	1	IC CXL1507N	
IC1002	WA4-5354-000 000	B	1	IC CXL5504M	
IC1003	WA3-5800-000 000	B	1	IC M62352GP	
IC1004	WA4-5351-000 000	B	1	IC CXA1391R	
IC1100	WA4-0349-000 000	B	1	IC NJM2904M	
IC1101	WA4-5480-000 000	B	1	IC LM324	
IC1103	WA3-3175-000 000	B	1	IC BU4066BF	
IC1104	WA4-5480-000 000	B	1	IC LM324	
IC1200	DH4-0405-000 000	B	1	IC MSM6539	
IC1201	WA3-4264-000 000	B	1	IC SC14S66FEL	
IC1202	WA4-5144-000 000	B	1	IC CXA1393AN	
IC1300	WA3-4264-000 000	B	1	IC SC14S66FEL	
IC1301	WA3-4264-000 000	B	1	IC SC14S66FEL	
IC1302	WA4-5352-000 000	B	1	IC CXA1392R	
IC1400	DH4-0362-000 000	B	1	IC uPD6144AG	
IC1401	WA3-5800-000 000	B	1	IC M62352GP	
IC1402	WA3-5800-000 000	B	1	IC M62352GP	
IC1403	Y22-2681-000 000	B	1	IC SC400373FU	
IC1404	DH4-0389-000 000	B	1	IC PST574CMTR	
IC2151	WA4-5316-000 000	B	1	IC TK11447	
IC2901	WA4-5428-000 000	B	1	IC BA7149F	
L2902	DH9-0619-000 000	D	1	COIL, LINEARITY	
LED861	WG1-0427-000 000	B	1	LED LT1D51A	
Q001	WA2-1132-000 000	B	1	TRANSISTOR FMA2	
Q002	Y22-2664-000 000	B	1	TRANSISTOR 2SD1622	
Q003	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q004	WA2-1202-000 000	B	1	TRANSISTOR 2SB1121	
Q005	WA2-1202-000 000	B	1	TRANSISTOR 2SB1121	

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q006	Y22-2663-000 000	B	1	TRANSISTOR 2SB1302	
Q007	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q008	Y22-2663-000 000	B	1	TRANSISTOR 2SB1302	
Q051	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q052	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q053	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q054	WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
Q055	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q056	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q057	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q058	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q059	WA2-5301-000 000	B	1	TRANSISTOR UMH8	
Q060	WA2-5314-000 000	B	1	TRANSISTOR UMH6	
Q061	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q062	WA2-5140-000 000	B	1	TRANSISTOR DTA144EE	
Q201	WA2-5347-000 000	B	1	TRANSISTOR RN2427	UC1HiE ONLY
Q201	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	UC20E ONLY
Q202	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q205	WA2-5160-000 000	B	1	TRANSISTOR UMT2	UC20E ONLY
Q206	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q207	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q208	WA2-5160-000 000	B	1	TRANSISTOR UMT2	UC1HiE ONLY
Q208	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC20E ONLY
Q209	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q210	WA2-5301-000 000	B	1	TRANSISTOR UMH8	UC1HiE ONLY
Q210	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC20E ONLY
Q211	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q211	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q212	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC1HiE ONLY
Q212	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q213	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC1HiE ONLY
Q214	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q215	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q216	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q217	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q218	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q219	WA2-5315-000 000	B	1	TRANSISTOR UMB5	UC1HiE ONLY
Q219	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q220	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q221	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC1HiE ONLY
Q221	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q222	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q223	WA2-5162-000 000	B	1	TRANSISTOR UMH5	UC1HiE ONLY
Q223	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q224	WA2-5162-000 000	B	1	TRANSISTOR UMH5	UC1HiE ONLY
Q225	WA2-5160-000 000	B	1	TRANSISTOR UMT2	UC1HiE ONLY
Q225	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC20E ONLY
Q226	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	UC1HiE ONLY
Q226	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC20E ONLY
Q227	WA2-5160-000 000	B	1	TRANSISTOR UMT2	UC1HiE ONLY
Q228	WA2-5315-000 000	B	1	TRANSISTOR UMB5	UC1HiE ONLY
Q228	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	UC20E ONLY
Q229	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q229	WA2-5162-000 000	B	1	TRANSISTOR UMH5	UC20E ONLY
Q230	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC1HiE ONLY
Q230	WA2-5169-000 000	B	1	FET 2SK880	UC20E ONLY
Q231	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q232	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	UC1HiE ONLY
Q232	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q233	WA2-5312-000 000	B	1	TRANSISTOR DTA114TE	UC1HiE ONLY

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q234	WA2-5313-000 000	B	1	TRANSISTOR UMB8	UC1HiE ONLY
Q234	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC20E ONLY
Q235	WA2-5301-000 000	B	1	TRANSISTOR UMH8	UC1HiE ONLY
Q236	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q237	WA2-5161-000 000	B	1	TRANSISTOR IMX2	UC1HiE ONLY
Q237	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q238	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q239	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q240	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q241	WA2-5169-000 000	B	1	FET 2SK880	UC20E ONLY
Q243	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	UC1HiE ONLY
Q244	WA2-0411-000 000	B	1	TRANSISTOR 2SA1314	UC1HiE ONLY
Q244	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	UC20E ONLY
Q245	WA2-5347-000 000	B	1	TRANSISTOR RN2427	UC1HiE ONLY
Q246	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q246	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q247	WA2-5165-000 000	B	1	TRANSISTOR UMD2	UC1HiE ONLY
Q248	WA2-5165-000 000	B	1	TRANSISTOR UMD2	UC1HiE ONLY
Q249	WA2-5165-000 000	B	1	TRANSISTOR UMD2	UC1HiE ONLY
Q250	WA2-5165-000 000	B	1	TRANSISTOR UMD2	UC1HiE ONLY
Q251	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q252	WA2-5156-000 000	B	1	TRANSISTOR DTC124EE	UC1HiE ONLY
Q253	WA2-5162-000 000	B	1	TRANSISTOR UMH5	UC1HiE ONLY
Q254	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q256	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q257	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q257	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q258	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC1HiE ONLY
Q258	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q259	WA2-5206-000 000	B	1	TRANSISTOR DTA124EE	UC1HiE ONLY
Q259	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q260	WA2-5323-000 000	B	1	TRANSISTOR UMX5	UC1HiE ONLY
Q260	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q261	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	UC1HiE ONLY
Q261	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q262	WA2-5140-000 000	B	1	TRANSISTOR DTA144EE	UC20E ONLY
Q263	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q263	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC20E ONLY
Q265	WA2-5165-000 000	B	1	TRANSISTOR UMD2	UC1HiE ONLY
Q265	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC20E ONLY
Q266	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q267	WA2-5314-000 000	B	1	TRANSISTOR UMH6	UC1HiE ONLY
Q267	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q268	WA2-5313-000 000	B	1	TRANSISTOR UMB8	UC1HiE ONLY
Q268	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q269	WA2-5312-000 000	B	1	TRANSISTOR DTA114TE	UC1HiE ONLY
Q270	WA2-5147-000 000	B	1	TRANSISTOR UMH6	
Q271	WA2-5165-000 000	B	1	TRANSISTOR UMZ1	
Q272	WA2-5314-000 000	B	1	TRANSISTOR UMD2	
Q273	WA2-5139-000 000	B	1	TRANSISTOR UMH6	
Q274	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q275	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q280	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q281	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q282	WA2-5156-000 000	B	1	TRANSISTOR DTC124EE	UC1HiE ONLY
Q283	WA2-5139-000 000	B	1	TRANSISTOR DTA124EE	UC1HiE ONLY
Q501	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q502	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q503	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q504	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q505	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q506	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q506	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC20E ONLY
Q507	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q508	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY
Q509	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q510	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q511	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q512	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY
Q513	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q514	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q515	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q516	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY
Q517	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q518	WA2-5306-000 000	B	1	TRANSISTOR DTA143EE	UC1HiE ONLY
Q519	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q520	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q521	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q602	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q603	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q604	WA2-5312-000 000	B	1	TRANSISTOR DTC114TE	
Q605	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q606	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q607	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q609	WA2-5325-000 000	B	1	TRANSISTOR UMB4	
Q610	WA2-5325-000 000	B	1	TRANSISTOR UMB4	
Q611	WA2-5325-000 000	B	1	TRANSISTOR UMB4	
Q615	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q701	WA2-5141-000 000	B	1	TRANSISTOR UMX2	UC1HiE ONLY
Q701	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q702	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q703	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q704	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q706	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q707	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q708	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q709	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q711	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q713	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY
Q713	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q714	WA2-5156-000 000	B	1	TRANSISTOR DTC124EE	UC1HiE ONLY
Q715	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q716	WA2-5169-000 000	B	1	FET 2SK880	UC1HiE ONLY
Q717	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	UC1HiE ONLY
Q717	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q718	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC1HiE ONLY
Q719	WA2-5161-000 000	B	1	TRANSISTOR UMX2	UC1HiE ONLY
Q719	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC20E ONLY
Q720	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q721	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	UC1HiE ONLY
Q722	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	UC1HiE ONLY
Q723	WA2-5162-000 000	B	1	TRANSISTOR UMH5	UC1HiE ONLY
Q724	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	UC1HiE ONLY
Q726	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	UC1HiE ONLY
Q727	WA2-5169-000 000	B	1	FET 2SK880	UC1HiE ONLY
Q801	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q802	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q803	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q804	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q805	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q806	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q807	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q808	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q809	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q810	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q811	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q812	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q813	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q861	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q862	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q863	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q864	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q865	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q866	WA2-5223-000 000	B	1	TRANSISTOR DTC144TE	
Q867	WA2-5315-000 000	B	1	TRANSISTOR UMB5	
Q868	WA2-5140-000 000	B	1	TRANSISTOR DTA144EE	
Q869	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q870	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q871	WA2-5371-000 000	B	1	TRANSISTOR DTA144TE	
Q872	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q873	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q874	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q875	WA2-5224-000 000	B	1	TRANSISTOR 2SC4213B	
Q876	WA2-5223-000 000	B	1	TRANSISTOR DTC144TE	
Q931	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q932	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q933	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q934	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q935	WA2-5371-000 000	B	1	TRANSISTOR DTA144TE	
Q1001	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1002	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1003	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q1004	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1100	WA2-5315-000 000	B	1	TRANSISTOR UMB5	
Q1101	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1102	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1103	WA2-5162-000 000	B	1	TRANSISTOR UMH5	
Q1104	WA2-5162-000 000	B	1	TRANSISTOR UMH5	
Q1105	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1106	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1107	WA2-5162-000 000	B	1	TRANSISTOR UMH5	
Q1108	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1109	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1110	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1200	WA2-5315-000 000	B	1	TRANSISTOR UMB5	
Q1201	WA2-5278-000 000	B	1	TRANSISTOR UMH4	
Q1202	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1203	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1204	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q1205	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q1206	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1300	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1301	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1302	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1303	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1304	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1305	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1306	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q1307	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1309	WA2-5161-000 000	B	1	TRANSISTOR UMX2	

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q1402	WA2-5147-000 000	B	1	TRANSISTOR UMZ1	
Q1403	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q1404	WA2-5314-000 000	B	1	TRANSISTOR UMH6	
Q1405	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q2150	WA2-1378-000 000	B	1	TRANSISTOR DTC144EU	
Q2901	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
Q2902	WA2-1498-000 000	B	1	TRANSISTOR 2SA1162	
Q2904	WA2-5423-000 000	B	1	TRANSISTOR 2SD968S	
RR1	DH9-0555-000 000	D	1	LINK, IC PRF-1600-F005	
RR2	DH9-0555-000 000	D	1	LINK, IC PRF-1600-F005	
RR3	DH9-0555-000 000	D	1	LINK, IC PRF-1600-F005	
T001	Y22-2682-000 000	C	1	TRANSFORMER	
⚠ T2901	DH9-0612-000 000	D	1	FLYBACK TRANSFORMER	
VC201	VC7-4970-300 000	C	1	CAPACITOR, TRIMMER 30pF	
VC1200	VC6-0340-400 000	C	1	CAPACITOR, TRIMMER 40pF	
VC1400	VC6-0340-300 000	C	1	CAPACITOR, TRIMMER 30pF	
VR001	Y22-2668-000 000	C	1	RESISTOR, VARIABLE 1KΩ	
VR002	Y22-2668-000 000	C	1	RESISTOR, VARIABLE 1KΩ	
VR003	Y22-2669-000 000	C	1	RESISTOR, VARIABLE 5KΩ	
VR004	Y22-2668-000 000	C	1	RESISTOR, VARIABLE 1KΩ	
VR051	VR7-2010-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
VR051	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC20E ONLY
VR053	VR7-2010-474 000	C	1	RESISTOR, VARIABLE 470KΩ	UC1HiE ONLY
VR053	VR5-7780-474 000	C	1	RESISTOR, VARIABLE 470KΩ	UC20E ONLY
VR201	VR7-2010-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC1HiE ONLY
VR201	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC20E ONLY
VR202	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR202	VR5-7780-332 000	C	1	RESISTOR, VARIABLE 3.3KΩ	UC20E ONLY
VR203	VR7-2010-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
VR203	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	UC20E ONLY
VR204	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR204	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR205	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR205	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR206	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR206	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR207	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR207	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR208	VR7-2010-471 000	C	1	RESISTOR, VARIABLE 470KΩ	UC1HiE ONLY
VR208	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	UC20E ONLY
VR209	VR7-2010-471 000	C	1	RESISTOR, VARIABLE 470KΩ	UC1HiE ONLY
VR209	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC20E ONLY
VR210	VR7-2010-471 000	C	1	RESISTOR, VARIABLE 470Ω	UC1HiE ONLY
VR210	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC20E ONLY
VR212	VR7-2010-473 000	C	1	RESISTOR, VARIABLE 47KΩ	UC1HiE ONLY
VR212	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	UC20E ONLY
VR213	VR7-2010-473 000	C	1	RESISTOR, VARIABLE 47KΩ	UC1HiE ONLY
VR213	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	UC20E ONLY
VR214	VR7-2010-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
VR215	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR215	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR216	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR217	VR7-2010-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
VR217	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
VR218	VR7-2010-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC1HiE ONLY
VR218	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	UC20E ONLY
VR219	VR7-2010-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
VR219	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC20E ONLY
VR501	VR7-2010-103 000	C	1	RESISTOR, VARIABLE 10KΩ	UC1HiE ONLY
VR502	VR7-2010-103 000	C	1	RESISTOR, VARIABLE 10KΩ	UC1HiE ONLY

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
VR503	VR7-2010-103 000	C	1	RESISTOR, VARIABLE 10KΩ	UC1HiE ONLY
VR504	VR7-2010-103 000	C	1	RESISTOR, VARIABLE 10KΩ	UC1HiE ONLY
VR603	VR7-2550-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR604	VR7-2550-474 000	C	1	RESISTOR, VARIABLE 470KΩ	
VR931	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR932	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR933	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR934	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR935	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR936	VR7-2550-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR1501	Y22-2671-000 000	C	1	RESISTOR, VARIABLE	
VR1502	Y22-2672-000 000	C	1	RESISTOR, VARIABLE	
VR2901	VR7-2100-201 000	C	1	RESISTOR, VARIABLE 200Ω/15V	
VR2902	VR7-2100-223 000	C	1	RESISTOR, VARIABLE 22KΩ/15V	
⚠ VR2903	VR7-2170-305 000	C	1	RESISTOR, VARIABLE 3MΩ/200V	
VR2904	VR7-0710-105 000	C	1	RESISTOR, VARIABLE 1MΩ/100V	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
12	DA1-3065-000 000	C	1	TAB, RETAINER	
10	DA1-3106-000 000	F	2	SCREW	
12	DA1-3148-000 000	C	1	BELT, CAPSTAN	
12	DA1-3151-000 000	C	1	GEAR	
12	DA1-3152-000 000	C	1	GEAR, CAM	
12	DA1-3153-000 000	C	1	GEAR	
12	DA1-3154-000 000	C	1	GEAR, SL	
12	DA1-3155-000 000	C	1	GEAR	
10	DA1-3156-000 000	C	2	GEAR	
12	DA1-3161-000 000	C	1	RACK, SL	
10	DA1-3163-000 000	C	1	LOCK LEVER, S	
12	DA1-3165-000 000	C	1	LEVER, EJECT	
10	DA1-3166-000 000	C	1	BRAKE, LOADING	
12	DA1-3167-000 000	C	1	LEVER, NEUTRAL	
12	DA1-3168-000 000	C	1	S MODE LEVER	
10	DA1-3170-000 000	C	1	HOLDER, LED	
12	DA1-3190-000 000	C	1	LEVER, MODE (2)	
10	DA1-3192-000 000	C	1	PLATE, SLIDE	
12	DA1-3195-000 000	C	1	LEVER, MODE (1)	
12	DA1-3196-000 000	C	1	LEVER, T MODE	
12	DA1-3265-000 000	F	2	SCREW	
12	DA1-3266-000 000	C	1	PLATE, GUIDE	
8,10,12	DA1-3312-000 000	F	9	WASHER	
10,12	DA1-3313-000 000	F	6	WASHER	
12	DA1-3315-000 000	F	1	SCREW	
12	DA1-3316-000 000	F	2	SCREW	
12	DA1-3317-000 000	F	2	SCREW	
12	DA1-3318-000 000	C	1	ROLLER	
10	DA1-3323-000 000	F	1	SCREW	
23	DA1-4243-000 000	B	1	SEAL	
6	DA1-4720-000 000	C	1	RUBBER, CCD	
4	DA1-5056-000 000	B	1	KNOB, BATTERY EJECT	
4	DA1-5064-000 000	B	1	TERMINAL BATTERY	
4	DA1-5070-000 000	B	2	HOLDER, WL-1	
4	DA1-5077-000 000	B	1	KNOB, TELE/WIDE	
24	DA1-5088-000 000	B	1	KNOB, RELEASE	
2	DA1-5099-000 000	B	1	EVF CUP	
6	DA1-5128-000 000	C	1	SHIELD SHEET	
6	DA1-5134-000 000	C	1	HOLDER, LENS	
6	DA1-5135-000 000	C	1	HOLDER, P.C.B.	
6	DA1-5136-000 000	C	1	HOLDER (A), RECORDER	
6	DA1-5138-000 000	C	1	PLATE, RECORDER	
6	DA1-5139-000 000	C	1	PLATE	
6	DA1-5140-000 000	C	1	PLATE	
6	DA1-5141-000 000	C	1	HOLDER (B), RECORDER	
6	DA1-5142-000 000	C	1	SHIELD SHEET	
6	DA1-5143-000 000	C	1	SHIELD SHEET, CCD	
6	DA1-5144-000 000	C	1	SHIELD SHEET	
6	DA1-5145-000 000	C	1	SHIELD SHEET	
6	DA1-5146-000 000	C	1	SHEET	
4	DA1-5157-000 000	B	1	HOOD, LENS	
4	DA1-5163-000 000	B	1	COVER, FUSE BATTERY	
4	DA1-5168-000 000	C	1	BAR, STRAP ATTACHMENT	
4	DA1-5178-000 000	C	1	REAR STAND	
4	DA1-5192-000 000	B	1	HOOK, BOTTOM	
4	DA1-5193-000 000	B	1	KNOB, RELEASE	
4	DA1-5194-000 000	B	1	PLATE, BOTTOM COVER	
4	DA1-5202-000 000	B	1	STRAP, HAND	
2	DA1-5207-000 000	B	1	EVF HOLDER	
2	DA1-5208-000 000	C	1	RING, RUBBER	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
2	DA1-5209-000 000	C	1	PLATE, EVF	
4	DA1-5218-000 000	C	1	BAR, STRAP ATTACHMENT	
4	DA1-5222-000 000	C	1	SHEET, STRAP	
4	DA1-5223-000 000	B	1	SEAL, BOTTOM COVER	
10	DA1-5284-050 000	C	1	LEVER, LOCK	
10	DA1-5285-000 000	C	2	HOLDER, SENSOR	
10	DA1-5286-000 000	C	1	RELEASE, RL	
10	DA1-5287-000 000	C	1	LEVER, TB	
10	DA1-5288-000 000	C	1	STOPPER, P12 ARM	
10	DA1-5289-000 000	C	1	DRIVE LEVER, RL	
10	DA1-5290-000 000	C	1	PIN	
8	DA1-5291-000 000	C	1	ROLLER	
8	DA1-5292-000 000	C	1	GUIDE, PRINTED CORD	
8	DA1-5293-000 000	C	1	FRAME	
10	DA1-5296-000 000	C	1	LEVER, DOWN	
8	DA1-5298-000 000	C	1	PLATE, CATCHING	
8	DA1-5302-000 000	F	4	SCREW	
4	DA1-5433-000 000	B	1	SEAL, REAR COVER	
12	DA1-5454-000 000	C	2	DAMPER	
4	DA1-5508-000 000	B	1	CAP, FRONT COVER	UC20E ONLY
6	DA1-5564-000 000	C	1	SHEET, SPONGE	
12	DF1-0607-000 000	C	1	EARTH	
12	DF1-0621-000 000	C	1	GEAR, MS	
12	DF1-0622-000 000	C	1	GEAR, SLIDE	
12	DF1-0625-000 000	C	1	GEAR, CAPSTAN	
12	DF1-0626-000 000	C	1	GEAR, DRIVE	
12	DF1-0629-000 000	C	1	P5 POST ASS'Y	
12	DF1-0630-000 000	C	1	P9 POST ASS'Y	
12	DF1-0633-000 000	C	1	P2 BASE ASS'Y	
10	DF1-0646-000 000	C	1	LEVER, STOP	
12	DF1-1172-000 000	C	1	LEVER, PINCH	
12	DG1-0979-000 000	C	1	LOADING ASS'Y	
8	DG1-0984-000 000	C	1	IDLER ASS'Y	
10	DG1-0985-000 000	C	1	LIMITTER, SLB	
10	DG1-0986-000 000	C	1	BRAKE, TB	
10	DG1-0989-000 000	C	1	PINCH ROLLER ASS'Y	
10	DG1-0990-000 000	C	1	ARM, P12	
10	DG1-0992-000 000	C	1	TENSION ARM ASS'Y	
8	DG1-0996-000 000	C	1	MOTOR, M	
12	DG1-0997-000 000	C	1	CAPSTAN MOTOR	
12	DG1-1014-000 000	C	1	P4 BASE ASS'Y	
2	DG1-1751-000 000	B	1	FINDER ASS'Y	
2	DG1-1752-000 000	C	1	CRT ASS'Y	
4	DG1-1882-000 000	C	1	KEY2 ASS'Y	
4	DG1-1883-001 000	C	1	FUSE BATTERY P.C.B. ASS'Y	
6	DG1-1884-000 000	C	1	HEAD PHONE P.C.B.	
6	DG1-1885-000 000	C	1	TERMINAL P.C.B. ASS'Y	UC1HiE ONLY
6	DG1-1888-000 000	C	1	VS P.C.B. ASS'Y	UC1HiE ONLY
6	DG1-1891-000 000	C	1	APS P.C.B. ASS'Y	UC20E ONLY
6	DG1-1893-000 000	C	1	VS P.C.B. ASS'Y	UC20E ONLY
6	DG1-1894-000 000	C	1	TERMINAL P.C.B.	UC20E ONLY
6	DG1-1903-000 000	C	1	AF P.C.B.	
6	DG1-1904-000 000	C	1	APS P.C.B. ASS'Y	UC1HiE ONLY
2	DG1-1906-000 000	C	1	EVF P.C.B. ASS'Y	
4	DG1-1909-000 000	B	1	CAP, LENS	
4	DG1-1913-000 000	B	1	LEFT COVER UNIT	
4	DG1-1915-000 000	B	1	BOTTOM COVER UNIT	
4	DG1-1916-000 000	B	1	REAR COVER UNIT	
4	DG1-1918-000 000	B	1	JACK COVER UNIT	UC1HiE ONLY
4	DG1-1922-000 000	B	1	RIGHT COVER UNIT	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
4	DG1-1924-000 000	B	1	GRIP COVER	
8	DG1-1945-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
10	DG1-1949-000 000	C	1	TENSION BAND ASS'Y	
4	DG1-2030-000 000	B	1	JACK COVER UNIT	UC20E ONLY
6	DG1-2059-000 000	C	1	SENSOR MODULE	
6	DG1-2061-000 000	C	1	POWER SUPPLY MODULE	
10	DG1-2074-000 000	C	1	REEL SUPPLY	
10	DG1-2075-000 000	C	1	REEL, TAKE UP	
12	DH2-1220-000 000	C	1	E.P.C., DRUM	
6	DH2-1551-000 000	C	1	PRINTED CODE	
6	DH2-1552-000 000	C	1	PRINTED CODE	
6	DH2-1553-000 000	C	1	PRINTED CODE	
6	DH2-1554-000 000	C	1	PRINTED CODE	
6	DH2-1555-000 000	C	1	PRINTED CODE	
6	DH2-1556-000 000	C	1	PRINTED CODE	
6	DH2-1557-000 000	C	1	PRINTED CODE	
6	DH2-1558-000 000	C	1	PRINTED CODE	
2	DH2-1562-000 000	C	1	PRINTED CODE	
12	DH2-1601-000 000	C	1	PRINTED CORD, M CHASSIS	
10	DH2-1602-000 000	C	1	PRINTED CODE, S CHASSIS	
6	DH2-1615-000 000	C	1	PRINTED CODE	
	DH4-0135-000 000	B	1	IC CXA1204Q	
	DH4-0189-000 000	B	1	IC CXA1127M	
	DH4-0196-000 000	B	1	IC CXA1203N	
	DH4-0200-000 000	B	2	IC CXA1234AR	
	DH4-0264-000 000	B	1	IC CXA1208R	
	DH4-0318-000 000	B	1	IC CXA1127AM	
	DH4-0362-000 000	B	1	IC uPD6144AG	
	DH4-0372-000 000	B	1	IC uPD6451AGT	
	DH4-0389-000 000	B	1	IC PST574CMTR	
	DH4-0401-002 000	B	1	IC CXP81316-328Q	
	DH4-0402-000 000	B	1	IC SC402070FB	
	DH4-0405-000 000	B	1	IC MSM6539	
	DH4-0408-000 000	B	1	IC CXP80116-593Q	UC20E ONLY
	DH4-0411-000 000	B	1	IC MM1058XF	UC1HiE ONLY
	DH4-0508-000 000	B	1	IC MN1024AF	UC1HiE ONLY
	DH4-0511-000 000	B	1	IC CXD2107M	UC1HiE ONLY
	DH4-0514-000 000	B	1	IC CXA1207AR	
	DH4-0523-000 000	B	1	IC CXP80116-725Q	UC1HiE ONLY
10	DH9-0468-000 000	C	1	SWITCH, PUSH	
10	DH9-0469-000 000	B	2	PHOTO REFLECTOR	
10	DH9-0470-000 000	B	1	LED GL452	
10	DH9-0508-000 000	B	2	PHOTO TRANSISTOR PT4850F	
10	DH9-0509-000 000	C	1	SWITCH	
4	DH9-0554-000 000	C	1	LITHIUM, BATTERY	
	DH9-0555-000 000	D	3	LINK, IC PRF-1600-F005	
4	DH9-0573-000 000	C	1	MIC ASS'Y	
	DH9-0574-000 000	C	1	PIN JACK	
6	DH9-0603-000 000	C	1	CRYSTAL FILTER	
	DH9-0607-000 000	C	1	PIN JACK	
	DH9-0612-000 000	D	1	FLYBACK TRANSFORMER	
	DH9-0619-000 000	D	1	COIL, LINEARITY	
10	DS1-5216-000 000	C	1	SPRING, COIL	
4	DS1-5244-000 000	B	1	SPRING, COIL	
8	DS1-5250-000 000	C	1	SPRING, COIL	
8	DS1-5251-000 000	C	1	SPRING, COIL	
10	DS1-5252-000 000	C	1	SPRING, COIL	
10	DS1-5253-000 000	C	1	SPRING, COIL	
10	DS1-5254-000 000	C	1	SPRING, COIL	
2	DS1-5255-000 000	C	1	SPRING, COIL	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
4	DS1-5256-000 000	C	1	SPRING, COIL	
10	DS1-6070-000 000	C	1	SPRING, COIL	
10	DS1-6081-000 000	C	1	SPRING, COIL	
8	DY1-7212-000 000	C	1	S CHASSIS ASS'Y	
8	DY1-7213-000 000	C	1	M CHASSIS ASS'Y	
4	DY1-7215-000 000	B	1	WIRELESS CONTROLLER WL-1	
4	DY1-7243-000 000	B	1	REAR COVER ASS'Y	
4	DY1-7244-000 000	B	1	FRONT COVER ASS'Y	
6	DY1-7245-000 000	C	1	HOLDER UNIT, RECORDER	
2	DY1-7246-000 000	B	1	RIGHT COVER ASS'Y, EVF	
2	DY1-7247-000 000	B	1	LEFT COVER ASS'Y EVF	
2	DY1-7250-000 000	C	1	ZOOM LENS ASS'Y	
2	DY1-7251-000 000	C	1	FRONT LENS ASS'Y	
2	DY1-7252-000 000	C	1	RELAY HOLDER UNIT	
4	DY1-7267-000 000	B	1	TOP COVER ASS'Y	UC20E ONLY
12	DY1-7268-000 000	E	1	UPPER DRUM ASS'Y	UC20E ONLY
12	DY1-7269-000 000	E	1	DRUM ASS'Y	UC20A ONLY
4	DY1-7275-000 000	B	1	COVER, CASSETTE	UC1HiE ONLY
4	DY1-7297-000 000	B	1	COVER, CASSETTE	UC20E ONLY
6	DY1-7308-000 000	C	1	CCD ASS'Y	
12	DY1-7309-000 000	E	1	UPPER DRUM ASS'Y	UC1HiE ONLY
12	DY1-7310-000 000	E	1	DRUM ASS'Y	UC1HiE ONLY
4	DY1-7316-000 000	B	1	TOP COVER ASS'Y	UC1HiE ONLY
12	DY2-1400-000 000	C	1	P10 UNIT	
12	DY2-1409-000 000	C	1	MOTOR, DRUM	
14	DY3-4201-000 000	C	1	CAP, LENS	
14	DY3-4209-000 000	C	1	CAP DUST (WD-37)	
14	DY3-4210-000 000	C	1	CAP DUST (TL-37)	
6	DY4-3002-000 000	C	1	PRINTED CODE	
6	DY4-3003-000 000	C	1	PRINTED CODE	
4	DY4-4383-000 000	B	1	COVER, BATTERY	
	VC6-0340-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VC6-0340-400 000	C	1	CAPACITOR, TRIMMER 40pF	
	VC7-1360-102 000	D	1	CAPACITOR, CERA, 1000pF/1kV	
	VC7-1380-152 000	D	1	CAPACITOR, CERA, 1500pF/500V	
	VC7-1430-472 000	D	1	CAPACITOR, CERA, 4700pF/125V	
	VC7-1730-106 000	D	1	CAPACITOR, ELEC. 10uF/16V	
	VC7-4970-300 000	C	1	CAPACITOR, TRIMMER 30pF	
	VR5-7780-102 000	C	4	RESISTOR, VARIABLE 1KΩ	UC20E ONLY
	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	UC20E ONLY
	VR5-7780-223 000	C	2	RESISTOR, VARIABLE 22KΩ	UC20E ONLY
	VR5-7780-332 000	C	1	RESISTOR, VARIABLE 3.3KΩ	UC20E ONLY
	VR5-7780-472 000	C	6	RESISTOR, VARIABLE 4.7KΩ	UC20E ONLY
	VR5-7780-473 000	C	3	RESISTOR, VARIABLE 47KΩ	UC20E ONLY
	VR5-7780-474 000	C	1	RESISTOR, VARIABLE 470KΩ	UC20E ONLY
	VR7-0710-105 000	C	1	RESISTOR, VARIABLE 1MΩ/100V	
	VR7-2010-102 000	C	1	RESISTOR, VARIABLE 1KΩ	
	VR7-2010-103 000	C	4	RESISTOR, VARIABLE 10KΩ	UC1HiE ONLY
	VR7-2010-223 000	C	5	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
	VR7-2010-471 000	C	1	RESISTOR, VARIABLE 470Ω	UC1HiE ONLY
	VR7-2010-472 000	C	8	RESISTOR, VARIABLE 4.7KΩ	UC1HiE ONLY
	VR7-2010-473 000	C	2	RESISTOR, VARIABLE 47KΩ	UC1HiE ONLY
	VR7-2010-474 000	C	1	RESISTOR, VARIABLE 470KΩ	UC1HiE ONLY
	VR7-2100-201 000	C	1	RESISTOR, VARIABLE 200Ω/15V	
	VR7-2100-223 000	C	1	RESISTOR, VARIABLE 22KΩ/15V	
	VR7-2170-305 000	C	1	RESISTOR, VARIABLE 3MΩ/200V	
	VR7-2550-103 000	C	6	RESISTOR, VARIABLE 10KΩ	
	VR7-2550-223 000	C	1	RESISTOR, VARIABLE 22KΩ	UC1HiE ONLY
	VR7-2550-474 000	C	1	RESISTOR, VARIABLE 470KΩ	UC1HiE ONLY
	VS1-1169-018 000	C	1	CONNECTOR 18P	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	VS1-1201-004 000	C	1	CONNECTOR 4P	
	VS1-5051-006 000	C	1	CONNECTOR 6P	
	VS1-5054-008 000	C	1	CONNECTOR 8P	
	VS1-5138-006 000	C	1	CONNECTOR 6P	
	VS1-5138-008 000	C	1	CONNECTOR 8P	
	VS1-5149-015 000	C	1	CONNECTOR 15P	
	VS1-5190-002 000	C	1	CONNECTOR 2P	
	VS1-5256-008 000	C	2	CONNECTOR 8P	
	VS1-5256-012 000	C	4	CONNECTOR 12P	
	VS1-5256-016 000	C	1	CONNECTOR 16P	
	VS1-5256-020 000	C	6	CONNECTOR 20P	
	VS1-5256-024 000	C	4	CONNECTOR 24P	
	VS1-5267-028 000	C	1	CONNECTOR 28P	
	VS1-5269-012 000	C	2	CONNECTOR 12P	
	VS1-5269-028 000	C	1	CONNECTOR 28P	
	VS1-5316-006 000	C	2	CONNECTOR 6P	
	VS1-5316-015 000	C	1	CONNECTOR 15P	
	VS1-5347-008 000	C	1	CONNECTOR 8P	
	WA1-0961-000 000	B	10	DIODE MA112	
	WA1-0989-000 000	B	10	DIODE MA3100W	
	WA1-1084-000 000	B	6	DIODE MA110	
	WA1-1123-000 000	B	1	DIODE AG01Z	
	WA1-1146-000 000	B	3	DIODE MA707	
	WA1-5092-000 000	B	1	DIODE 1T33C	
	WA1-5122-000 000	B	8	DIODE DAN222	UC20E ONLY
	WA1-5227-000 000	B	2	DIODE 1SS362	
	WA1-5231-000 000	B	10	DIODE DAP222	
	WA1-5236-000 000	B	12	DIODE DA221	
	WA1-5241-000 000	B	2	DIODE DA227	
	WA1-9003-000 000	B	3	DIODE SB0505CP	
	WA2-0411-000 000	B	1	TRANSISTOR 2SA1314	UC1HiE ONLY
	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
	WA2-1132-000 000	B	1	TRANSISTOR FMA2	
	WA2-1202-000 000	B	2	TRANSISTOR 2SB1121	
	WA2-1337-000 000	B	2	TRANSISTOR 2SC4081	
	WA2-1378-000 000	B	1	TRANSISTOR DTC144EE	
	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
	WA2-1498-000 000	B	1	TRANSISTOR 2SA1162	
	WA2-5139-000 000	B	25	TRANSISTOR DTC144EE	
	WA2-5140-000 000	B	3	TRANSISTOR DTA144EE	UC20E ONLY
	WA2-5141-000 000	B	19	TRANSISTOR 2SA1774	UC20E ONLY
	WA2-5142-000 000	B	36	TRANSISTOR 2SC4617	
	WA2-5147-000 000	B	16	TRANSISTOR UMZ1	
	WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
	WA2-5152-000 000	B	3	TRANSISTOR 2SB1424	
	WA2-5156-000 000	B	3	TRANSISTOR DTC124EE	
	WA2-5160-000 000	B	7	TRANSISTOR UMT2	
	WA2-5161-000 000	B	21	TRANSISTOR UMX2	
	WA2-5162-000 000	B	6	TRANSISTOR UMH5	
	WA2-5165-000 000	B	8	TRANSISTOR UMD2	
	WA2-5169-000 000	B	3	TRANSISTOR 2SK880	
	WA2-5206-000 000	B	1	TRANSISTOR DTA124EE	UC1HiE ONLY
	WA2-5223-000 000	B	2	TRANSISTOR DTC144TE	
	WA2-5224-000 000	B	10	TRANSISTOR 2SC4213B	
	WA2-5278-000 000	B	1	TRANSISTOR UMH4	
	WA2-5301-000 000	B	3	TRANSISTOR UMH8	
	WA2-5306-000 000	B	1	TRANSISTOR DTA143EE	
	WA2-5307-000 000	B	7	TRANSISTOR 2SC4649	UC20E ONLY
	WA2-5312-000 000	B	3	TRANSISTOR DTA114TE	
	WA2-5313-000 000	B	2	TRANSISTOR UMB8	UC1HiE ONLY

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	WA2-5314-000 000	B	8	TRANSISTOR UMH6	
	WA2-5315-000 000	B	5	TRANSISTOR UMB5	
	WA2-5323-000 000	B	1	TRANSISTOR UMX5	UC1HiE ONLY
	WA2-5325-000 000	B	3	TRANSISTOR UMB4	
	WA2-5346-000 000	B	4	TRANSISTOR 2SA1362	
	WA2-5347-000 000	B	2	TRANSISTOR RN2427	UC1HiE ONLY
	WA2-5371-000 000	B	2	TRANSISTOR DTA144TE	
	WA2-5423-000 000	B	1	TRANSISTOR 2SD968S	UC20E ONLY
	WA3-3175-000 000	B	2	IC BU4066BF	
	WA3-4068-000 000	B	1	IC SC14SU69F	
	WA3-4264-000 000	B	5	IC SC14S66FEL	
	WA3-5455-000 000	B	1	IC SC7SU04F	
	WA3-5598-000 000	B	1	IC MC14053BF	UC1HiE ONLY
	WA3-5657-000 000	B	1	IC SC14S70FER	
	WA3-5800-000 000	B	3	IC M62352GP	
	WA3-6006-000 000	B	1	IC MC14013BF	UC1HiE ONLY
	WA3-6112-000 000	B	1	IC RTC-4553A	
	WA4-0349-000 000	B	2	IC NJM2904M	
	WA4-0363-000 000	B	1	IC NJM4556M	
	WA4-0509-000 000	B	2	IC NJM2043M	
	WA4-0907-000 000	B	1	IC BA6303F	UC1HiE ONLY
	WA4-1145-000 000	B	2	IC RH5VA45AA	
	WA4-5144-000 000	B	1	IC CXA1393AN	
	WA4-5161-000 000	B	1	IC CXA1512M	
	WA4-5164-000 000	B	1	IC UPC393G2	
	WA4-5316-000 000	B	1	IC TK11447	
	WA4-5331-000 000	B	1	IC LM311	
	WA4-5332-000 000	B	1	IC MB3783	
	WA4-5336-000 000	B	1	IC MPC1720ML2	
	WA4-5351-000 000	B	1	IC CXA1391R	
	WA4-5352-000 000	B	1	IC CXA1392R	
	WA4-5353-000 000	B	1	IC CXL1507N	
	WA4-5354-000 000	B	1	IC CXL5504M	
	WA4-5365-000 000	B	1	IC LA7456M	
	WA4-5402-000 000	B	1	IC RH5RA35AA	
	WA4-5422-000 000	B	1	IC S-81350HG	
	WA4-5428-000 000	B	1	IC BA7149F	
	WA4-5435-000 000	B	2	IC LA7454W	
	WA4-5470-000 000	B	1	IC TL1596CDB	
	WA4-5480-000 000	B	4	IC LM324	
	WG1-0427-000 000	B	1	LED LT1D51A	
2	WG8-5043-000 000	B	1	SWITCH, RESET	
	WS6-5001-000 000	C	1	MIC JACK	
	WS6-5007-000 000	C	1	TERMINAL, S	UC1HiE ONLY
	WS6-5029-000 000	C	1	JACK CONNECTOR	
	WS6-5036-000 000	C	1	JACK CONNECTOR	
12	XA1-1140-167 000	F	3	SCREW	
12	XA1-1140-259 000	F	3	SCREW	
12	XA1-1140-307 000	F	3	SCREW	
4	XA1-1170-259 000	F	1	SCREW	
12	XA1-7140-147 000	F	1	SCREW	
8,10	XA1-7140-229 000	F	5	SCREW	
6,8,12	XA1-7140-257 000	F	12	SCREW	
6,10	XA1-7140-307 000	F	3	SCREW	
4	XA1-7140-309 000	F	2	SCREW	
8,10,12	XA1-7140-357 000	F	6	SCREW	
6	XA1-7170-207 000	F	4	SCREW	
6	XA1-7170-307 000	F	4	SCREW	
4	XA1-7170-309 000	F	1	SCREW	
4	XA1-7170-359 000	F	4	SCREW	

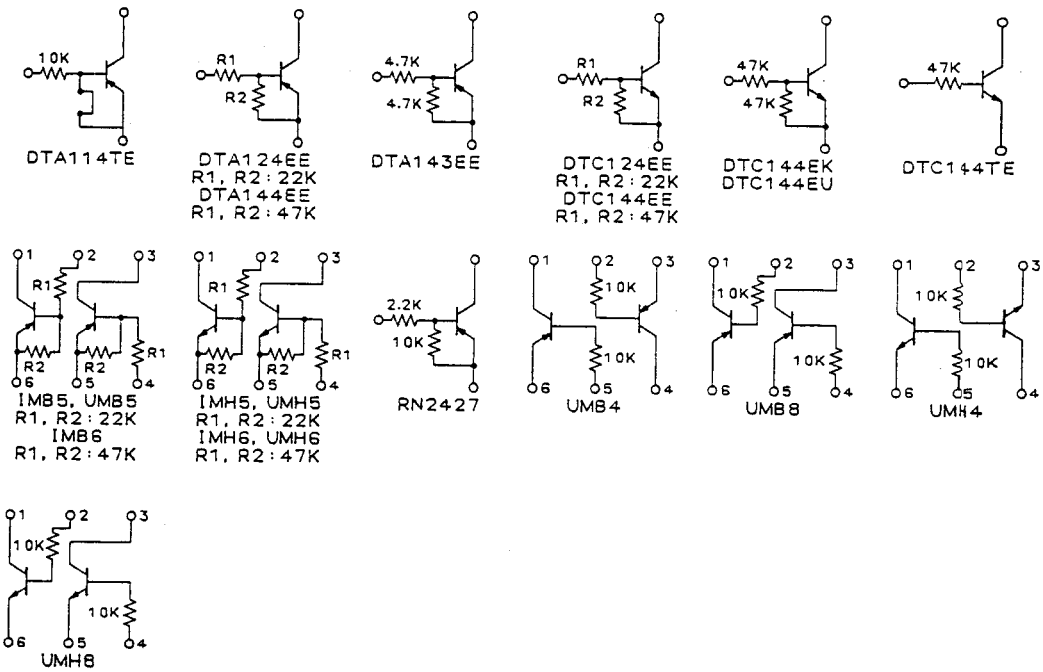
PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
4	XA1-7170-459 000	F	2	SCREW	
2	XA4-4170-457 000	F	4	SCREW	
4	XA4-9170-309 000	F	1	SCREW	
4	XA4-9170-409 000	F	18	SCREW	
4,6	XA4-9170-459 000	F	22	SCREW	
2	XA4-9170-509 000	F	4	SCREW	
4	XA4-9170-609 000	F	5	SCREW	
2	XA4-9170-807 000	F	2	SCREW	
6	XA9-0549-000 000	F	3	SCREW	
4	XA9-0580-000 000	F	9	SCREW	
12	XD1-1102-111 000	F	1	WASHER	
12	XD2-1100-102 000	F	1	E RING	
8,10	XD2-1100-132 000	F	3	E RING	
12	XD2-1100-172 000	F	1	E RING	
2	XG8-1100-582 000	C	1	STEEL BALL	
	Y22-2663-000 000	B	2	TRANSISTOR 2SB1302	
	Y22-2664-000 000	B	1	TRANSISTOR 2SD1622	
	Y22-2665-000 000	B	1	DIODE SB0703CP	
	Y22-2666-000 000	B	1	DIODE SB0209CP	
	Y22-2668-000 000	C	3	RESISTOR, VARIABLE 1KΩ	
	Y22-2669-000 000	C	1	RESISTOR, VARIABLE 5KΩ	
	Y22-2670-000 000	C	1	CONNECTOR 20P	
	Y22-2671-000 000	C	1	RESISTOR, VARIABLE	
	Y22-2672-000 000	C	1	RESISTOR, VARIABLE	
	Y22-2681-000 000	B	1	IC SC400373FU	
	Y22-2682-000 000	C	1	TRANSFORMER	
2	YG9-5185-000 000	C	1	POTENTION METER UNIT	
2	YH7-0045-000 000	C	1	PZ MOTOR	
2	YH7-0046-000 000	C	1	STEPPING MOTOR	
2	YH8-0029-000 000	C	1	IG METER UNIT	

(4) PC board layout

Orange	:	Component side
Netted black (▒▒▒)	:	Soldering side
Black	:	Parts on component side
Blue	:	Parts on soldering side
Blue (———)	:	Signal pattern on power supply layer
Blue (– – – –)	:	Signal pattern on ground layer

2. Equivalent circuits of digital transistor



3. Indications on circuit diagram

- Constants of hatched elements are different according to the model.
- Resistance is represented in ohms (Ω).
- Capacitance is represented in farads (F).
- Wattage of resistor is 1/16 W (power supply and EVF P.C.B.s) and 1/32 W (for others).
- Voltages are measured with a digital voltmeter.
- Waveform photographs are taken by using a 10:1 probe.
- IC No. in each P.C.B.s are listed on the bottom of diagrams.
- No. colored in blue are listed on the No. of waveform photographs.
- Voltage values indicated in circuit diagram are based on the following condition.

Camera section

Color bar, standard angle of view, adjust mode

Recorder section

Recording : (UC1HiE)
Color bar (pattern generator) Hi8 tape
(UC20E)
Color bar (pattern generator)

Playback : (UC1HiE)
Self-recording playback (color bar) Hi8 tape
(UC20E)
Self-recording playback (color bar)

CONTENTS

CHAPTER IV. DIAGRAMS

<Guide to diagrams>

(1) Signal lines in block diagrams

Camera section
- Red (———) : Y
- (– – – –) : C

AF section
- Red (———) : ES/CU

Syscon-servo section
- Red (———) : Drum servo signal
- (– – – –) : Capstan servo signal

Video section
- Red (———) : Recording
- (– – – –) : Playback

(2) Voltage on circuit diagrams
- Red : Recording mode
- Black : Playback mode

(3) Signal lines on circuit diagrams

Camera section
- Red : Power supply line
- Blue : Luminance signal
- Orange : Chrominance signal
- Gray (▒▒▒▒) : Luminance + Chrominance signals

Recorder section
- Red : Power supply line
- Blue (———) : Capstan PWM signal
- (– – – –) : Capstan FG signal
- (—·—·—) : Capstan ATF signal
- Orange (———) : Drum PWM signal
- (– – – –) : Drum FG signal
- (—·—·—) : Drum PG signal

Recorder section
- Gray (▒▒▒▒) : Recording luminance + Chrominance signals
- (▒▒▒▒) : Playback luminance + Chrominance signals
- Blue (———) : Recording luminance signal
- (– – – –) : Playback luminance signal
- (—·—·—) : Recording (Hi8) signal
- Orange (———) : Recording chrominance signal
- (– – – –) : Playback chrominance signal
- Red (———) : Recording audio signal
- (– – – –) : Playback audio signal

INTERCONNECTION DIAGRAM

HEAD PHONE P.C.B.	
CN2101	
1	REMOCON DATA
2	EDIT 6V
3	LANC TERMINAL
4	TALLY
5	GND
6	SS 5V
7	HP-COM
8	HP-COM
9	HP-COM
10	HP OUT (R)
11	HP-COM
12	HP OUT (L)

TERMINAL P.C.B.	
CN2150	
1	UNREG 6V
2	VIDEO I/O
3	S TERMINAL DET Ⓛ
4	GND
5	C I/O
6	V TERMINAL IN Ⓛ
7	GND
8	Y I/O
CN2153	
1	AUDIO 5V
2	LINE AUDIO (L)
3	GND
4	LINE AUDIO (R)
5	GND
6	PIN DET Ⓛ
7	MIC AUDIO (R)
8	MS MIC (R)
9	GND
10	MS MIC (L)
11	MIC AUDIO (L)
12	GND

SENSOR P.C.B.	
CN901	
1	øV4
2	øV3
3	øV2
4	øV1
5	OG
6	VG1
7	VG2
8	VG3
9	VS
10	VO
11	OD
12	RD
13	RG
14	PRW
15	HL 1
16	NC
17	V-SUB
18	WEL
19	H1
20	H2
CN902	
1	+15.5V
2	-7V
3	CAMERA 5V
4	CAMERA 5V
5	GND
6	V-SUB CONT
7	RG CONT
8	SHUTTER 2
9	SHUTTER 1
10	SHUTTER 0
11	ID
12	CLP 4
13	CLP 3
14	CLP 2
15	GND
16	CLOCK 2
17	GND
18	DL 1
19	DL 2
20	GND

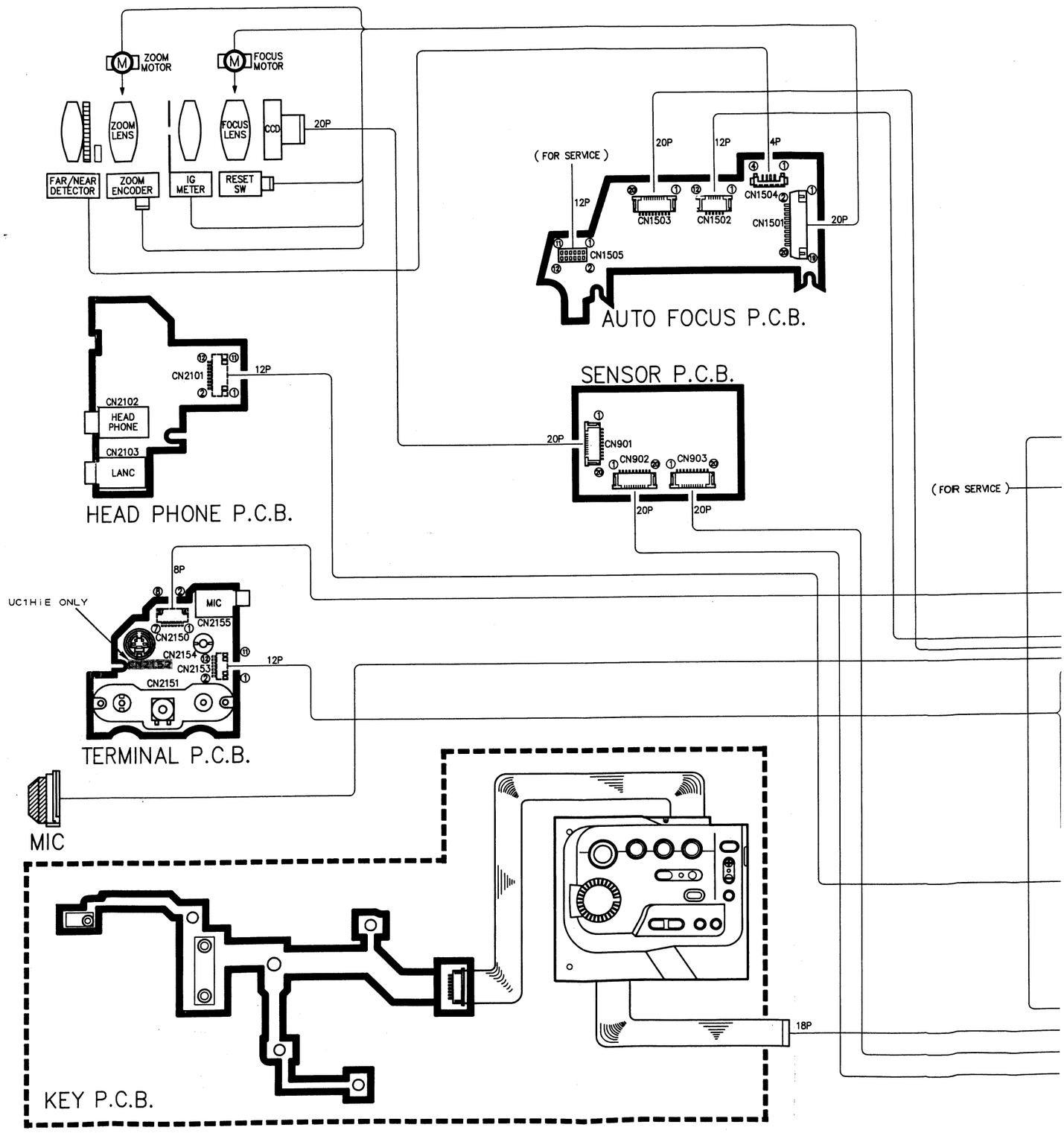
CN903	
1	DET
2	IRIS OUT
3	S/H OUT
4	CS GC
5	GND
6	CAMERA (Y)
7	S2
8	S1
9	GND
10	VG
11	AGC CONT
12	SYNC
13	HD
14	LALT
15	BF
16	BLK
17	VD
18	PLL
19	GND
20	SC

AUTO FOCUS P.C.B.	
CN1501	
1	PM3
2	PM4
3	PM1
4	PM2
5	CAMERA 5V
6	RESET SW Ⓛ
7	RESET SENS LED
8	C-
9	D+
10	IN (+)
11	OUT (+)
12	IN (-)
13	OUT (-)
14	D-
15	C+
16	TELE Ⓗ
17	WIDE Ⓗ
18	ZOOM POSITION
19	GND
20	+3.6V
CN1502	
1	ZOOM SPEED UP Ⓛ
2	ZOOM WIDE Ⓛ
3	ZOOM TELE Ⓛ
4	ZOOM POSITION
5	UNREG 6V
6	UNREG 6V
7	CAMERA 5V
8	CAMERA 5V
9	Y
10	GND
11	YS
12	GND
CN1503	
1	FOCUS FRAME
2	GND
3	IRIS CONT
4	GND
5	IRIS O/C
6	GND
7	I ENC 1
8	I ENC 2
9	GND
10	RESET Ⓛ
11	AF Ⓗ/MANU Ⓛ
12	FACE
13	LENS CAP Ⓗ
14	P.ON.BLK
15	IRIS ENC
16	+3.6V
17	GND
18	VD
19	HD
20	GND
CN1504	
1	GND
2	CAMERA 5V
3	F1
4	F0

KEY P.C.B.	
1	SS 5V
2	RECORDER LED Ⓛ
3	CAMERA LED Ⓛ
4	PROGRAM AE 3
5	PROGRAM AE 2
6	PROGRAM AE 1
7	GND
8	FADE KEY Ⓛ
9	(+) KEY Ⓛ
10	(-) KEY Ⓛ
11	POWER SW Ⓛ
12	TRIG Ⓛ
13	TELE SW
14	WIDE SW
15	R-KEY
16	C-KEY2
17	EVER 5V
18	C-KEY 1

VS P.C.B.	
CN051	
1	GND
2	MODE SW 1
3	MODE SW 2
4	MODE SW 3
5	GND
6	DEW Ⓗ
CN052	
1	TAPE LED
2	GND
3	REEL VCC
4	GND
5	T REEL SENS
6	T REEL SENS
7	EOT SENS Ⓗ
8	SS 5V
9	GND
10	ME Ⓗ/MP Ⓛ
11	HIMP Ⓛ
12	REC PROOF Ⓛ
13	CASSETTE IN Ⓛ
14	GND
15	BOT SENS Ⓗ
16	SS 5V
CN053	
1	LOAD MTR (+)
2	LOAD MTR (-)
CN054	
1	GND
2	GND
3	DRUM-VS
4	GND
5	DRUM ERROR
6	CAPSTAN-VS
7	LITHIUM 3V
8	CAPSTAN ERROR
9	EVER 5V
10	EJECT Ⓛ
11	VTR ON Ⓛ
12	AUDIO 5V
13	UNREG 6V
14	CAMERA ON Ⓛ
15	GND
16	SS 5V
17	GND
18	VIDEO 5V
19	UNREG 6V
20	VIDEO 5V
21	GND
22	EVF 5V
23	GND
24	CAMERA 5V
25	GND
26	GND
27	+15.5V
28	-7V
CN055	
1	W
2	W
3	V
4	V
5	U
6	U
7	V+
8	V-
9	W+
10	W-
11	COM
12	DRUM-FG
13	DRUM-PG
14	NC
15	U-
16	U+
17	H+
18	H-
19	NC
20	NC

CN056	
1	V+
2	H+
3	U
4	U+
5	U-
6	V-
7	H-
8	W+
9	W-
10	V
11	SS 5V
12	CAPSTAN-FG 1
13	W
14	CAPSTAN-FG 2
15	GND
CN057	
1	C-LOG Ⓗ
2	SP/LP DET
3	GND
4	PB-RF
5	ON SCREEN Ⓛ
6	ENH ON Ⓗ
7	C-SYNC
8	JOG Ⓗ
9	EVF VD
10	AUDIO-MUTE Ⓗ
11	AUDIO 5V
12	AUDIO 5V
13	GND
14	GND
15	S-CLOCK 1
16	S-DATA OUT 1
17	NC
18	CG-STROBE Ⓗ
19	Hi8 Ⓗ/NORMAL Ⓛ
20	HiMP Ⓛ OUT
21	ME Ⓛ
22	NC
23	NC
24	S TERMINAL DET Ⓛ
CN058	
1	CAPSTAN-FG
2	TEST KEY
3	VTR ON Ⓛ
4	GND
5	PB-RF
6	1/2 SW PULSE
7	SW PULSE
8	VIDEO OUT
9	CAMERA (C)
10	VarS IN Ⓛ
11	GND
12	CAMERA (Y)
CN059	
1	SS 5V
2	VTR ON Ⓛ
3	UNREG 6V
4	EJECT Ⓛ
5	EVER 5V
6	S-DATA OUT 1
7	S-DATA IN 1
8	S-CLOCK
9	CAMERA ON Ⓛ
10	LITHIUM 3V
11	E5 DET
12	SERVO-CS Ⓛ
13	SERVO RESET Ⓛ
14	SERVO REQUEST Ⓗ
15	CASSETTE IN Ⓛ
16	REC PROOF Ⓛ
17	MP Ⓗ/ME Ⓛ
18	HIMP Ⓛ
19	GND
20	GND
21	JITTER ERROR
22	NC
23	JITTER ERROR MIX Ⓗ
24	DOC/V-MASK Ⓛ



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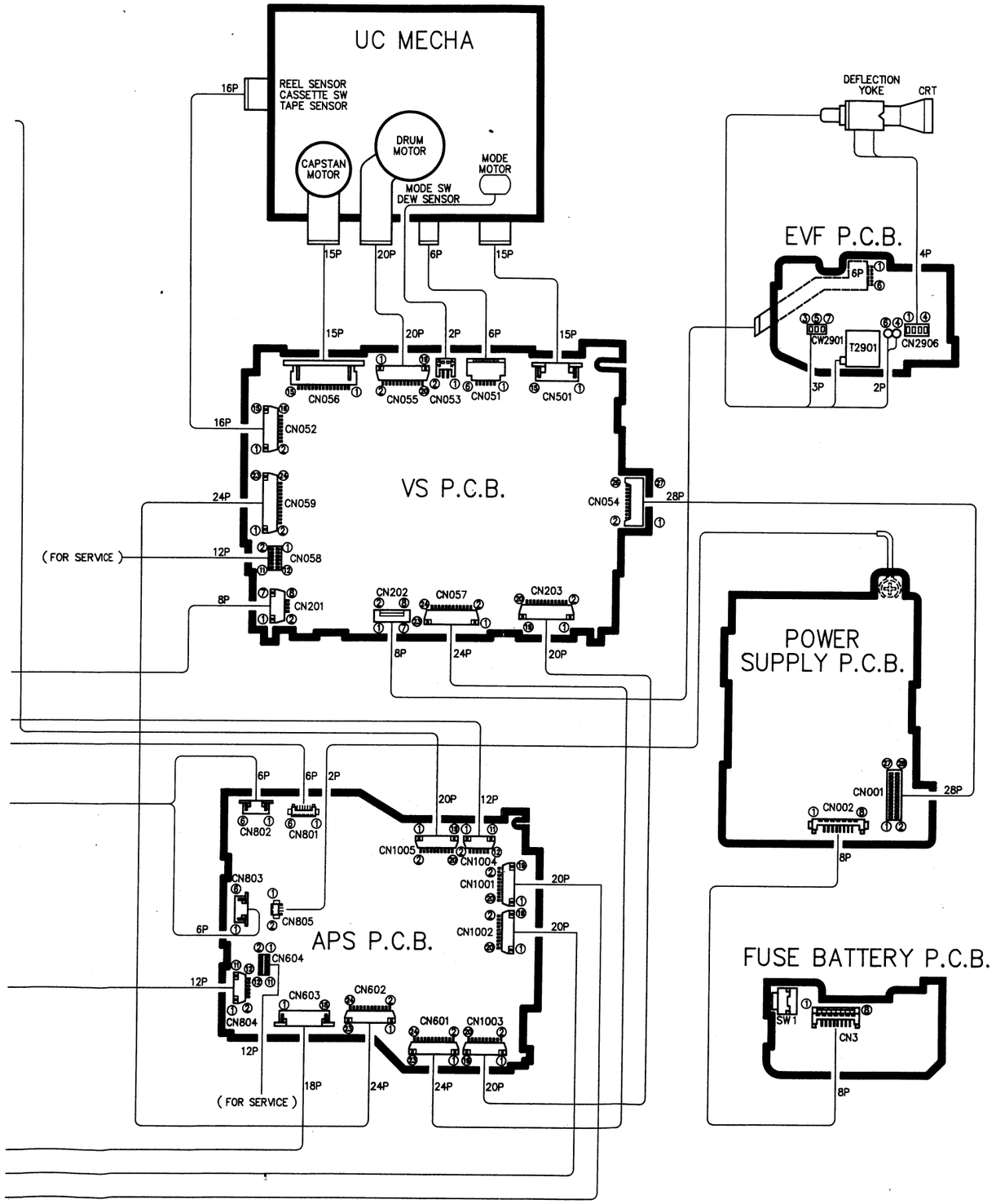


VS P.C.B.	
CN201	
1	Y I/O
2	GND
3	V TERMINAL IN Ⓛ
4	C I/O
5	GND
6	S TERMINAL DET Ⓛ
7	VIDEO I/O
8	UNREG 6V
CN202	
1	EVF 5V
2	EVF 5V
3	EVF VIDEO
4	GND
5	EVF VD
6	EVF HD
7	GND
8	GND
CN203	
1	CAMERA 5V
2	CAMERA 5V
3	CAMERA (C)
4	GND
5	GND
6	CANERA (Y)
7	GND
8	UNREG 6V
9	UNREG 6V
10	FOCUS FLAME
11	+15.5V
12	−7V
13	1/2 SW PULSE
14	SW PULSE
15	CAMERAⒽ/LINE Ⓛ
16	SPⒽ/LP Ⓛ
17	REC−AUDIO
18	PBⒽ/EE Ⓛ
19	GND
20	SC
CN501	
1	FE HEAD
2	GND
3	GND
4	VIDEO 5V
5	CH−3
6	GND
7	VIDEO 5V
8	CH−4
9	GND
10	VIDEO 5V
11	CH−2
12	GND
13	VIDEO 5V
14	CH−1
15	GND

APS P.C.B.	
CN601	
1	S TERMINAL DET Ⓛ
2	CONB ONⒽ
3	COMB IN Ⓛ
4	ME Ⓛ
5	HIMP Ⓛ OUT
6	Hi8 Ⓗ/NORM Ⓛ
7	CG−STROBEⒽ
8	NC
9	S−DATA OUT 1
10	S−CLOCK 1
11	GND
12	GND
13	AUDIO 5V
14	AUDIO 5V
15	AUDIO−MUTEⒽ
16	EVF−VD
17	JOGⒽ
18	C−SYNC
19	ENH ONⒽ
20	ON SCREEN Ⓛ
21	PB−RF
22	GND
23	SP/LP DET
24	C−LOG Ⓗ

CN602	
1	DOC/V−MASK Ⓛ
2	JITTER ERROR MIXⒽ
3	NC
4	JITTER ERROR
5	GND
6	GND
7	HIMP Ⓛ
8	MPⒽ/ME Ⓛ
9	REC PROOF Ⓛ
10	CASSETTE IN Ⓛ
11	SERVO REQUEST Ⓗ
12	SERVO RESETⓁ
13	SERVO−CS Ⓛ
14	E5 DET
15	LITHIUM 3V
16	CAMERA ON Ⓛ
17	S−CLOCK
18	S−DATA IN 1
19	S−DATA OUT 1
20	EVER 5V
21	EJECT Ⓛ
22	UNREG 6V
23	VTR ON Ⓛ
24	SS 5V
CN603	
1	SS 5V
2	RECORDER LED Ⓛ
3	CAMERA LED Ⓛ
4	PROGRAM AE 3
5	PROGRAM AE 2
6	PROGRAM AE 1
7	GND
8	FADE KEY Ⓛ
9	(+) KEY Ⓛ
10	(−) KEY Ⓛ
11	POWER SW Ⓛ
12	TRIG Ⓛ
13	TELE SW
14	WIDE SW
15	R−KEY
16	C−KEY 2
17	EVER 5V
18	C−KEY 1
CN604	
1	TELE SW
2	WIDE SW
3	JITTER ERROR MIXⒽ
4	SW PULSE
5	POWER SW Ⓛ
6	MODE 2
7	GND
8	MODE 1
9	EXT Y
10	EXT C
11	MODE 3
12	CAMERA LED Ⓛ
CN801	
1	GND
2	L+R
3	L+R BIAS
4	L−R BIAS
5	L−R
6	GND
CN802	
1	MIC AUDIO (L)
2	MS MIC (R)
3	GND
4	MS MIC (L)
5	MIC AUDIO (R)
6	GND
CN803	
1	AUDIO 5V
2	LINE AUDIO (L)
3	GND
4	LINE AUDIO (R)
5	GND
6	PIN DET Ⓛ
CN804	
1	HP OUT (L)
2	HP−COM
3	HP OUT (R)
4	HP−COM
5	HP−COM
6	HP−COM
7	SS 5V
8	GND
9	TALLY
10	LANC TERMINAL
11	EDIT 6V
12	REMOCON DATA
CN805	
1	GND
2	GND

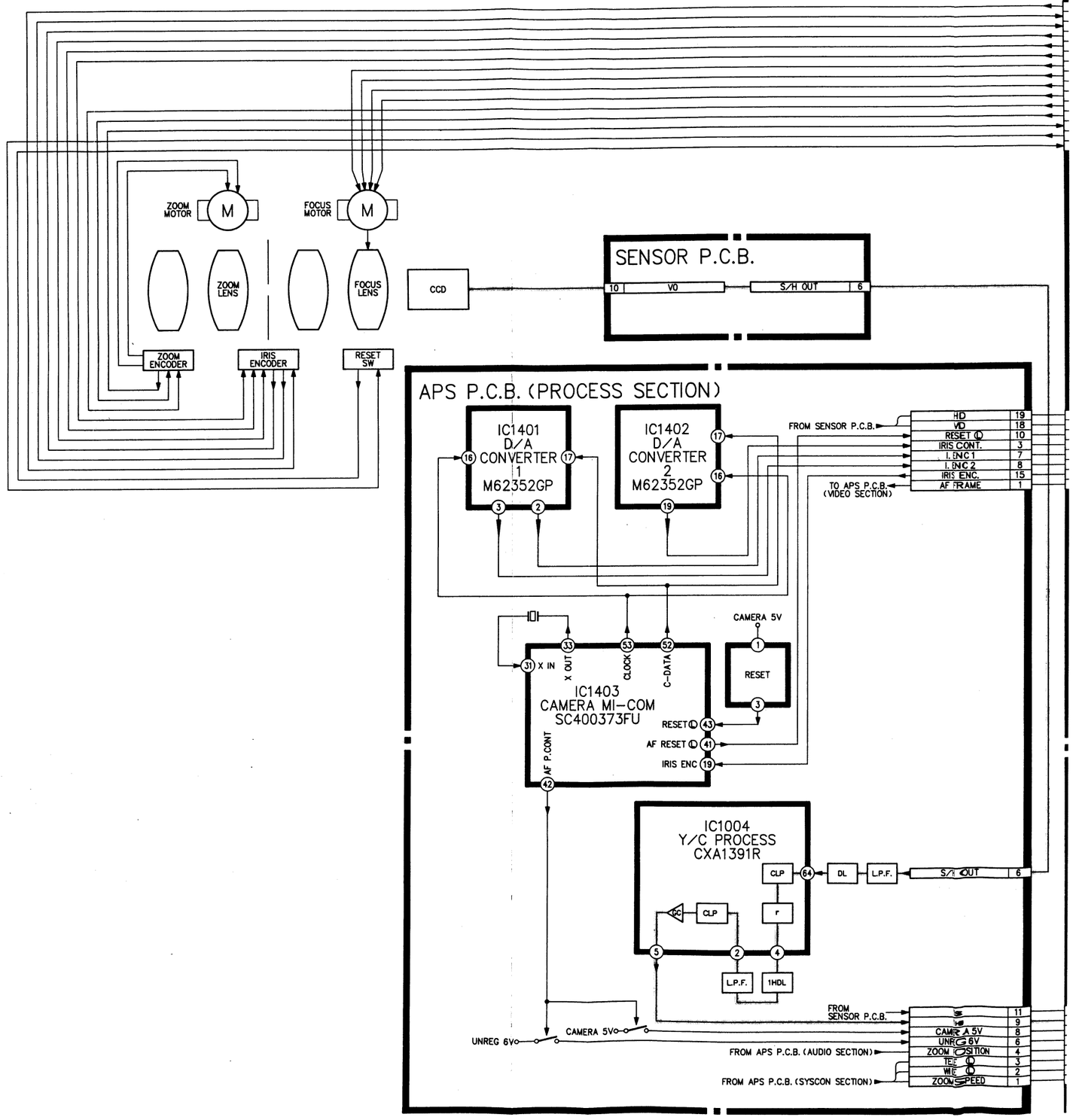
CN1001	
1	+15.5V
2	−7V
3	CAMERA 5V
4	CAMERA 5V
5	GND
6	V−SUB CONT.
7	RG CONT.
8	SHUTTER 2
9	SHUTTER 1
10	SHUTTER 0
11	ID
12	CLP 4
13	CLP 3
14	CLP 2
15	GND
16	CLOCK 2
17	GND
18	DL 1
19	DL 2
20	GND
CN1002	
1	DET
2	IRIS OUT
3	S/H OUT
4	CS GC
5	GND
6	CAMERA (Y)
7	S2
8	S1
9	GND
10	VG
11	AGC CONT
12	SYNC
13	HD
14	LALT
15	BF
16	BLK
17	VD
18	PLL
19	GND
20	SC
CN1003	
1	SC
2	GND
3	PBⒽ/EE Ⓛ
4	REC−AUDIO
5	SPⒽ/LP Ⓛ
6	CAMERAⒽ/LINE Ⓛ
7	SW PULSE
8	1/2 SW PULSE
9	−7V
10	+15.5V
11	FOCUS FLAME
12	UNREG 6V
13	UNREG 6V
14	GND
15	CAMERA (Y)
16	GND
17	GND
18	CAMERA (C)
19	CAMERA 5V
20	CAMERA 5V
CN1004	
1	ZOOM SPEED UP Ⓛ
2	ZOOM WIDE Ⓛ
3	ZOOM TELE Ⓛ
4	ZOOM POSITION
5	UNREG 6V
6	UNREG 6V
7	CAMERA 5V
8	CAMERA 5V
9	Y
10	GND
11	YS
12	GND
CN1005	
1	FOCUS FRAME
2	GND
3	IRIS CONT
4	GND
5	IRIS O/C
6	GND
7	I ENC 1
8	I ENC 2
9	GND
10	RESET Ⓛ
11	AFⒽ/MANU Ⓛ
12	FACE
13	LENS CAP Ⓗ
14	P.ON.BLK
15	IRIS ENC
16	+3.6V
17	GND
18	VD
19	HD
20	GND

POWER SUPPLY P.C.B.	
CN001	
1	GND
2	GND
3	DRUM−VS
4	GND
5	DRUM ERROR
6	CAPSTAN−VS
7	LITHIUM 3V
8	CAPSTAN ERROR
9	EVER 5V
10	EJECT Ⓛ
11	VTR ONⓁ
12	AUDIO 5V
13	UNREG 6V
14	CAMERA ON Ⓛ
15	GND
16	SS 5V
17	GND
18	VIDEO 5V
19	UNREG 5V
20	VIDEO 5V
21	GND
22	EVF 5V
23	GND
24	CAMERA 5V
25	GND
26	GND
27	+15.5V
28	−7V
CN002	
1	LITHIUM 3V
2	UNREG 6V
3	UNREG 6V
4	UNREG 6V
5	GND
6	GND
7	EVER 5V
8	EJECT Ⓛ

FUSE BATTERY P.C.B.	
CN3	
1	LITHIUM 3V
2	UNREG 6V
3	UNREG 6V
4	UNREG 6V
5	GND
6	GND
7	EVER 5V
8	EJECT Ⓛ

EVF P.C.B.	
1	EVF 5V
2	EVF VIDEO
3	GND
4	EVF VD
5	EVF HD
6	GND
CW2901	
1	H.V
3	K
4	G3
5	G1
6	G2
7	H
CN2906	
1	H+
2	H−
3	V+
4	V−

BLOCK DIAGRAM AUTO FOCUS SECTION



• SIGNAL PATH ES/CU SIGNAL

AUTO FOCUS P.C.B.

CN1501
13 OUT (−)
11 OUT (+)
12 IN (−)
10 IN (+)
15 C+
9 D+
3 PM 1
4 PM 2
1 PM 3
2 PM 4
16 TELE Ⓗ
17 WIDE Ⓗ
18 ZOOM POSITION
7 RESET SENS LED
6 RESET SW Ⓛ

IC1502
LB1837M
AF MOTOR
DRIVER

IC1505
(2/2)
DRIVER

IC1505
NJM3414M
(1/2)
BUFFER

Q1502
AMP

IC1503
LB1830M
PZ MOTOR
DRIVER

CN1503
HD 19
VD 18
RESET Ⓛ 10
IRIS CONT. 3
I. ENC 1 7
I. ENC 2 8
IRIS ENC. 15
AF FRAME 1

FL1501 180ns DL
FL1502 180ns DL
VR1501 ES OFFSET

IC1501
LD5088
TV − AF

AMP
INV/NON INV
ABSOL.
X 2
A DIVISION B (A/B)
X 6
CLIP (180mV)
SW
AMP
LPF
BPF
BPF
AMP
ABSOL.
GAIN SELECT
GATE
PEAK HOLD (H)
PEAK HOLD (V)
X (−2)
GATE
PEAK HOLD (H)
PEAK HOLD (V)
X (−2)
VCLR
CP
GATE
AF FRAME
NTSC Ⓗ/PAL Ⓛ
FOCUS FRAME SW
VCC
VD
CR1
CR2
HD
CLAMP
HL GATE

BUFFER Q1503

CAMERA 5V
VR1502
BPF CONT.

CAMERA 5V
CAMERA 5V
CAMERA 5V
CAMERA 5V
CAMERA 5V

7 ZOOM WIDE Ⓗ
8 ZOOM TELE Ⓗ
13 ZOOM POSITION
63 F1
64 F0
17 ES
18 RESET SW Ⓛ
19 CU
50 RESET SENS LED
20 HL
42 FOCUS FRAME SW
31 X OUT
33 X IN

IC1504
MC68HC11E9
AF MI−COM

LED DRIVE Q1501

X1501
12MHz

Q1504 (1/2) INV.
Q1504 (2/2) INV.

CAMERA 5V
PMM 1 62
PMM 2 59
PMM 3 58
PMM 4 57
PM 4 9
PM 3 10
PM 2 11
PM 1 12
RESET Ⓛ 43
G SEL. 37
S-DATA 51
S-DATA 52
S-CLOCK 53
AF-CS 54
TELE Ⓛ 34
WIDE Ⓛ 36
ZOOM SPEED 16
IRIS ENC. 15
SEL. B 5
SEL. A 6

CN1504
F1 3
F0 4
TO FHOTO SENSORS

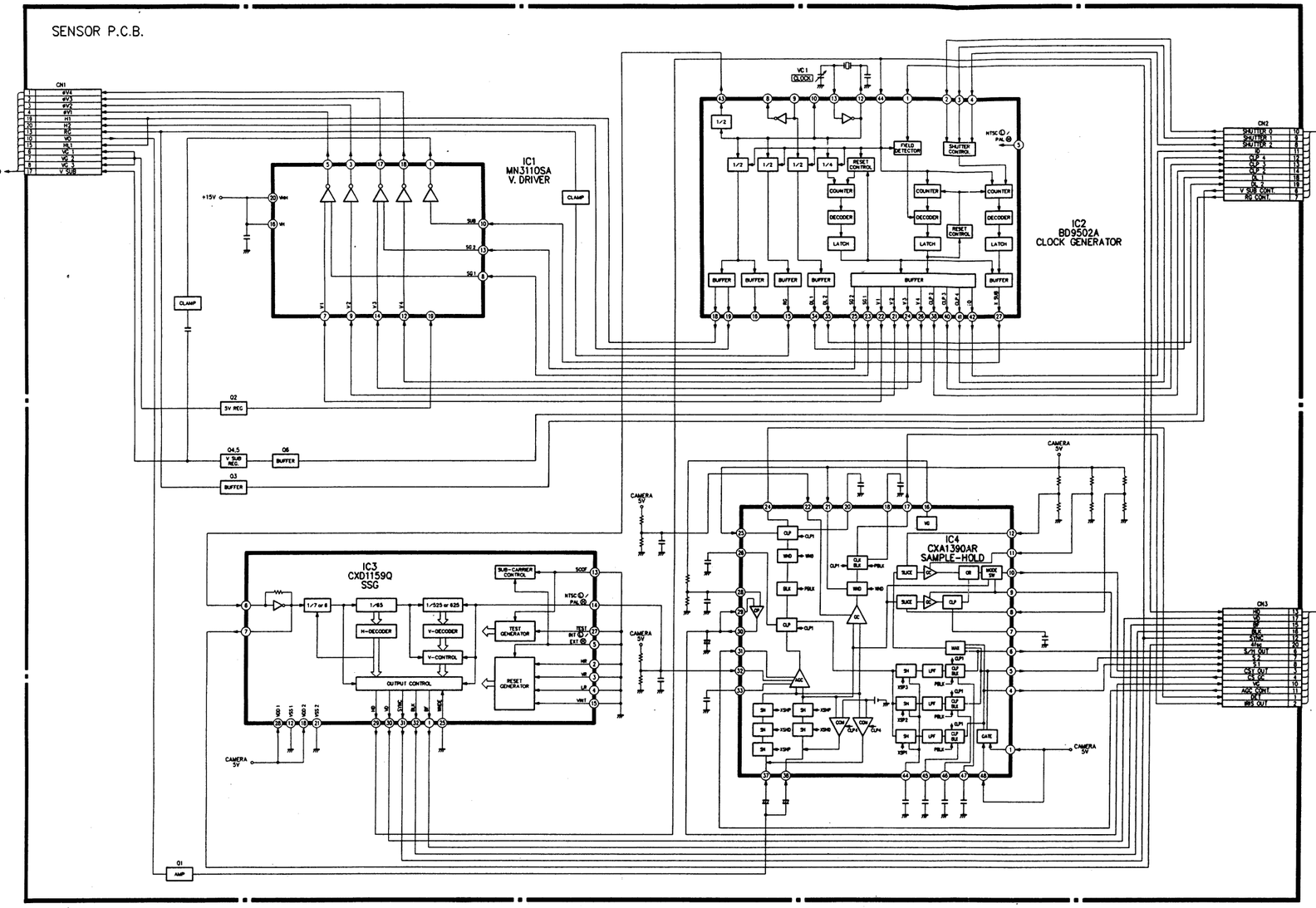
CN1505
S-CLOCK 1
S-DATA 2
AF-CS 4
S-DATA 5
FOR SERVICE

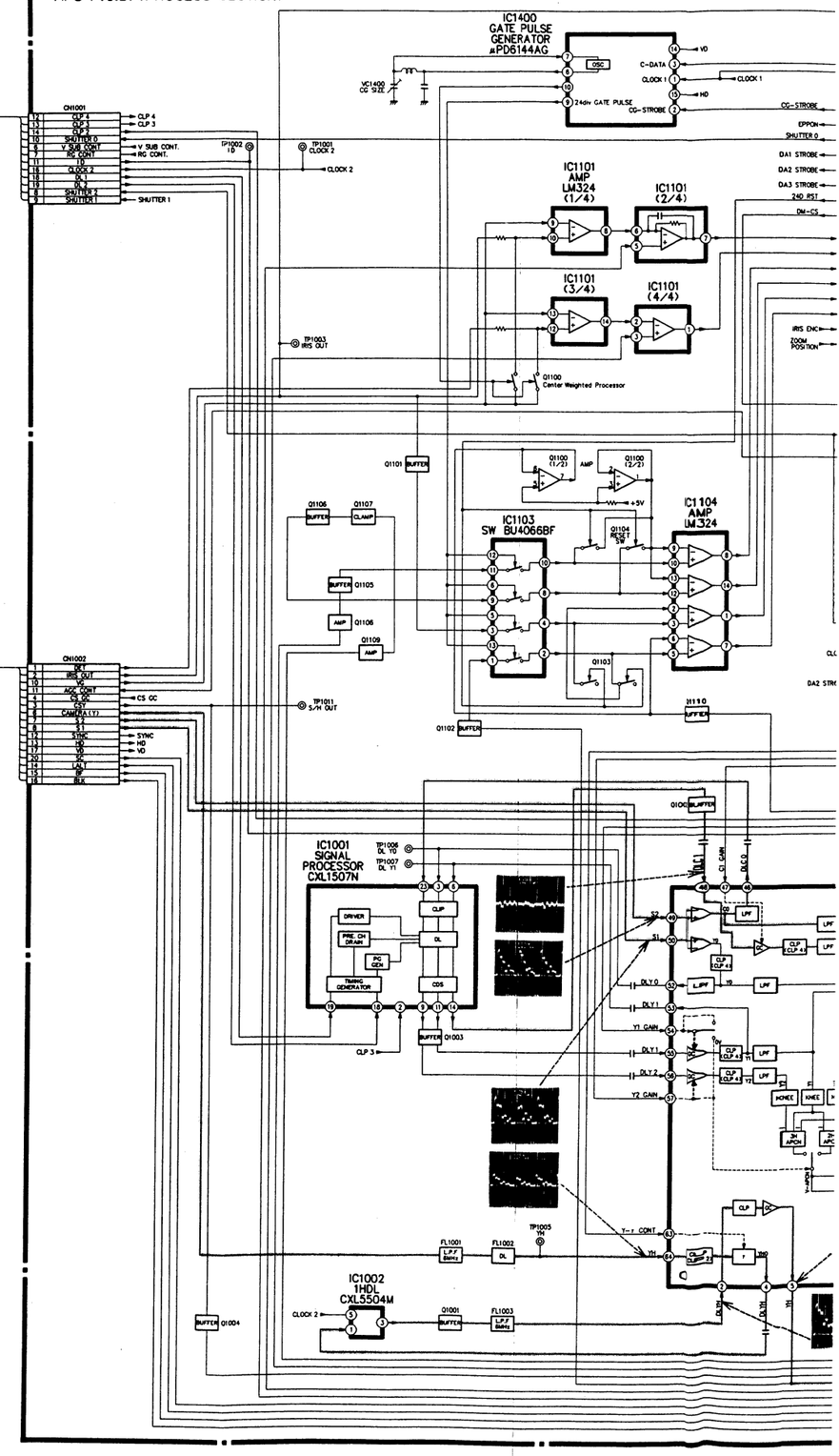
S/H OUT 6

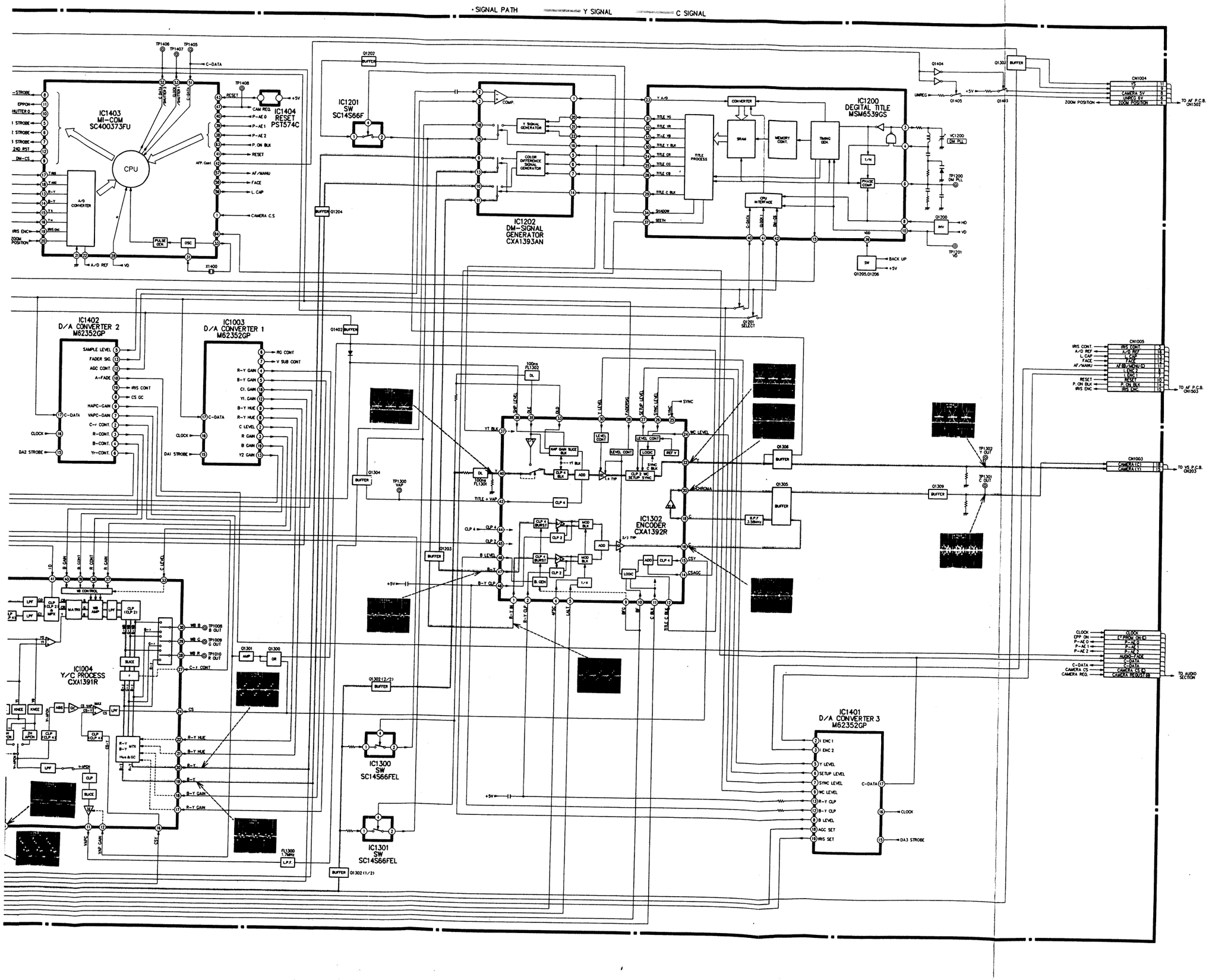
CN1502
Ys 11
YH 9
CAMERA 5V 8
UNREG 6V 6
ZOOM POSITION 4
TELE Ⓛ 3
WIDE Ⓛ 2
ZOOM SPEED 1

(CAMERA 5V)
(UNREG 6V)

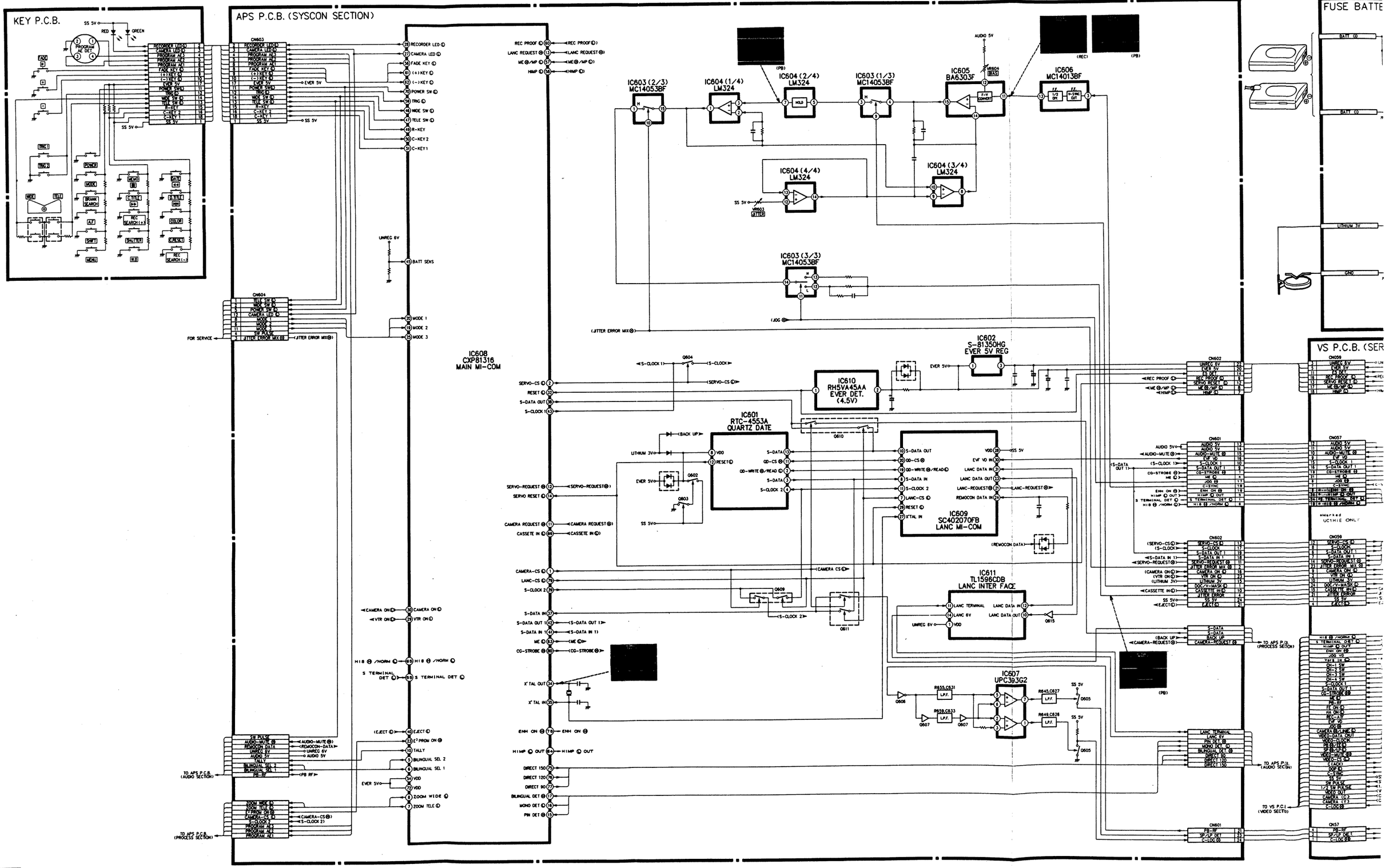
BLOCK DIAGRAM SENSOR , PROCESS SECTION

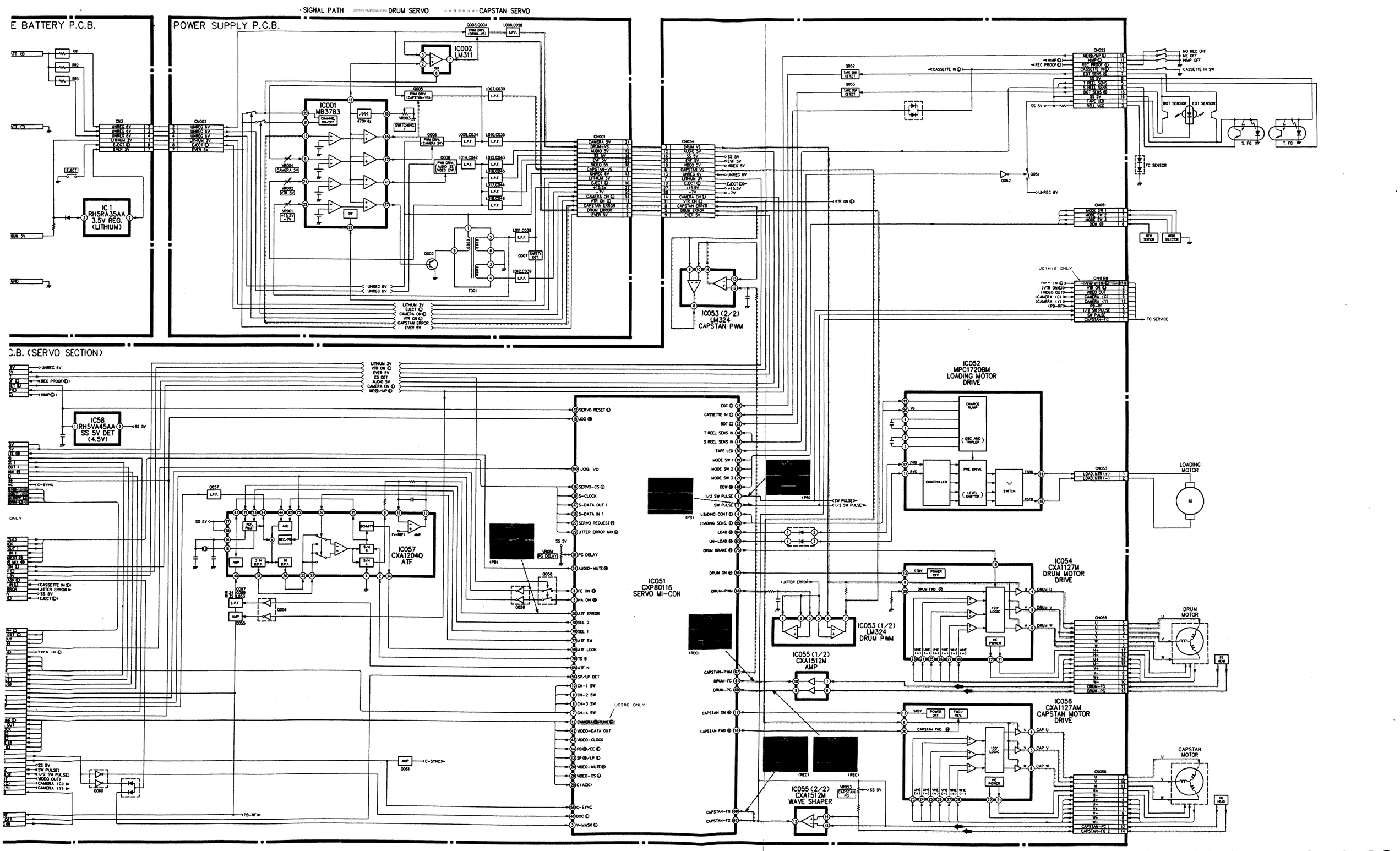




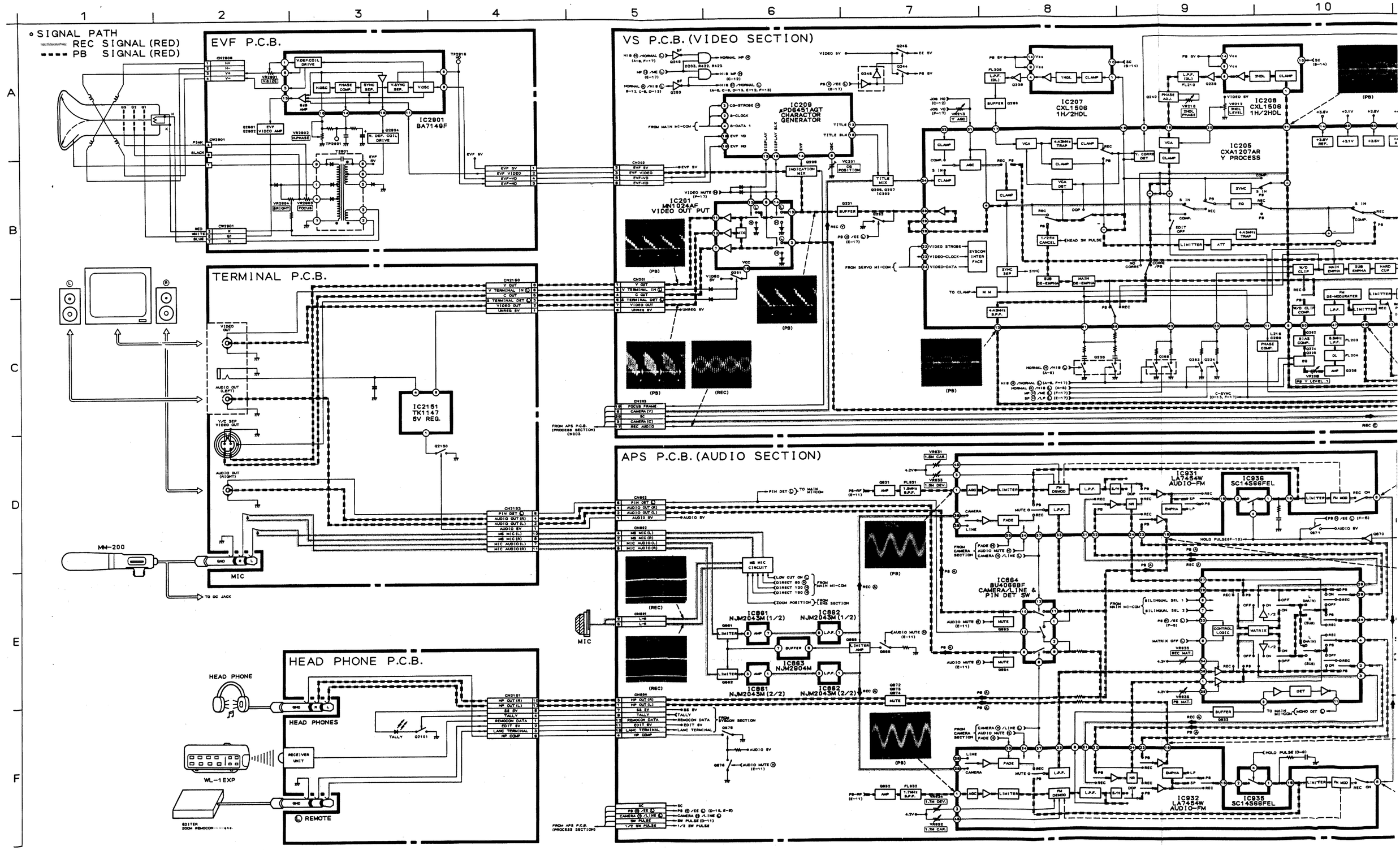


BLOCK DIAGRAM SYSCON-SERVO SECTION





BLOCK DIAGRAM AUDIO-VIDEO SECTION(UC1HiE)



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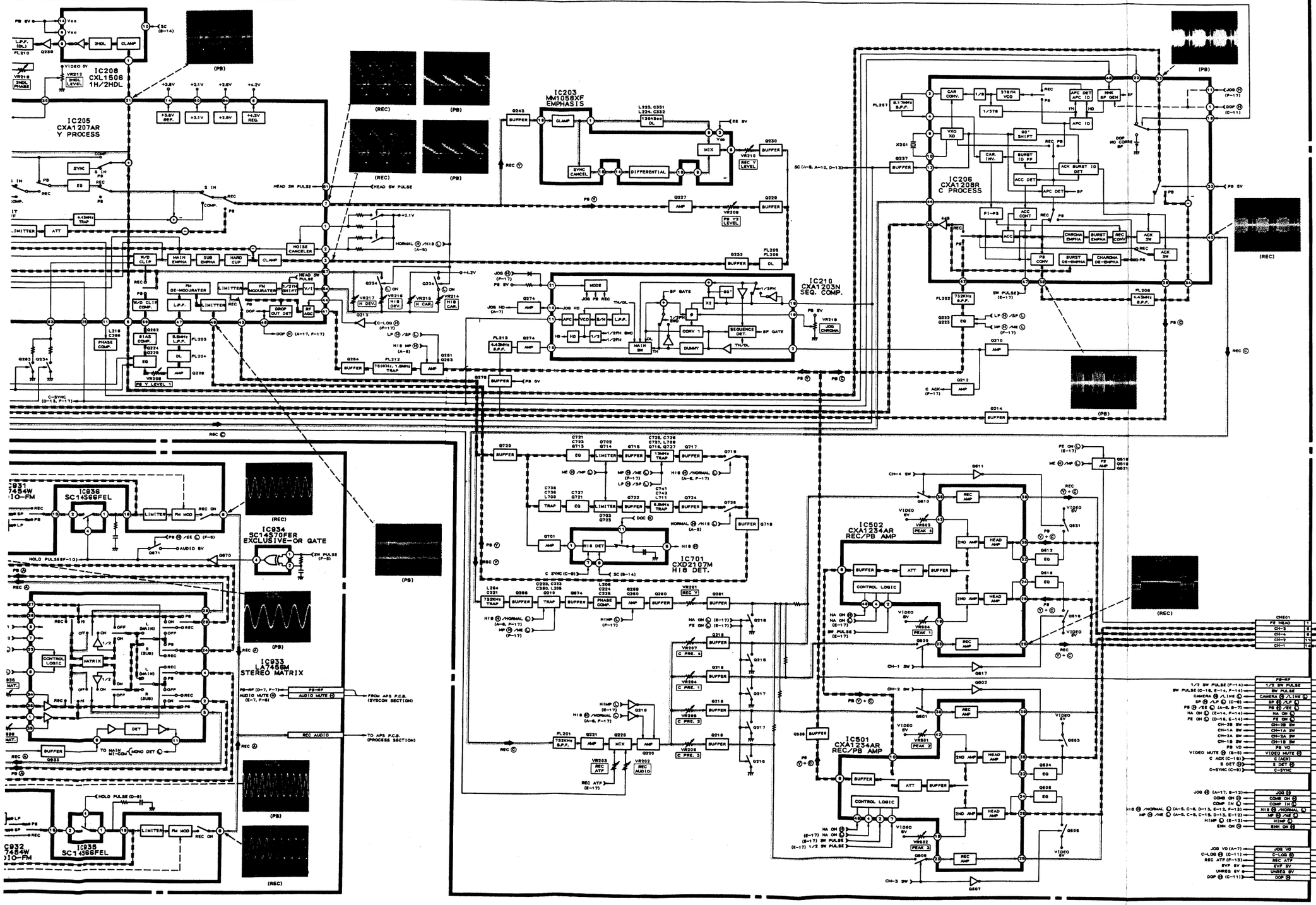


CIRCUIT BOARD DIAGRAM APS P.C.B.

APS P.C.B. (COMPONENT SIDE)

< NOTICE >

APS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

○ : Soldering side ⟷ Component side

Ⓖ : Soldering side (Component side) ⟷ Ground

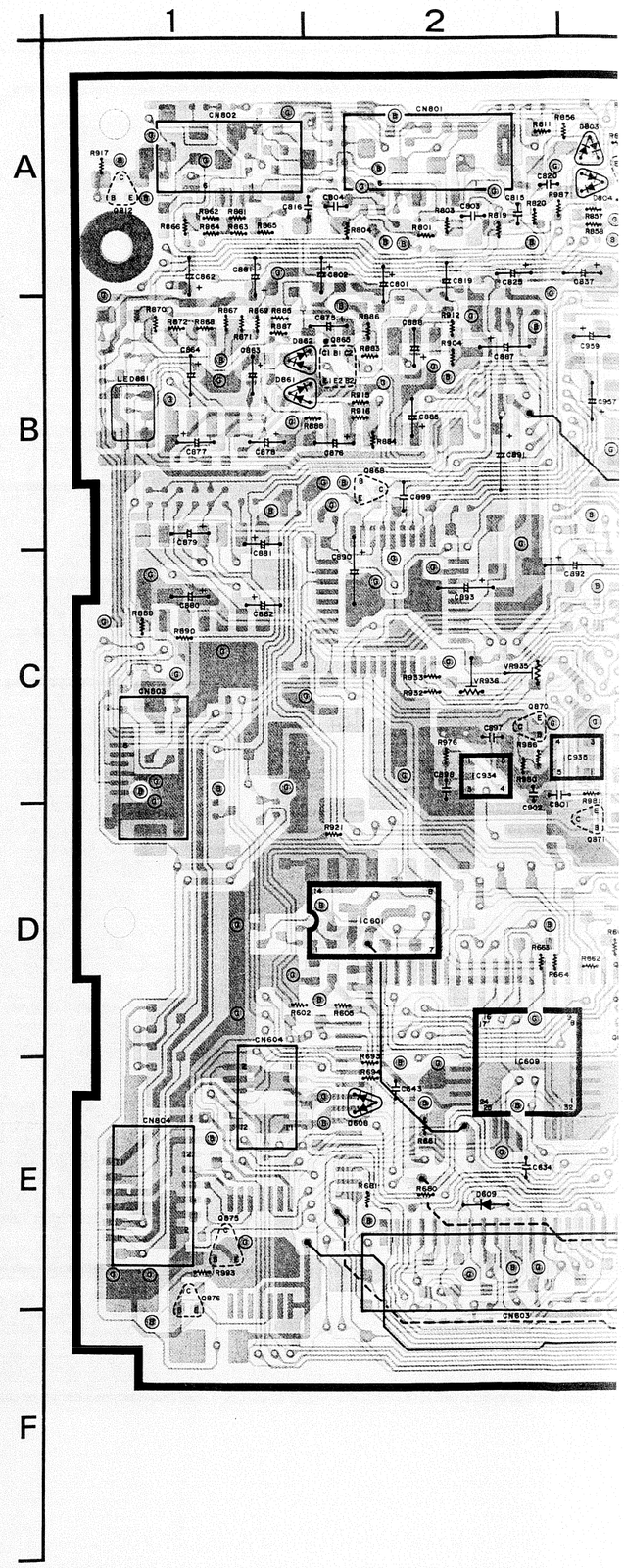
Ⓑ : Soldering side (Component side) ⟷ Power Supply

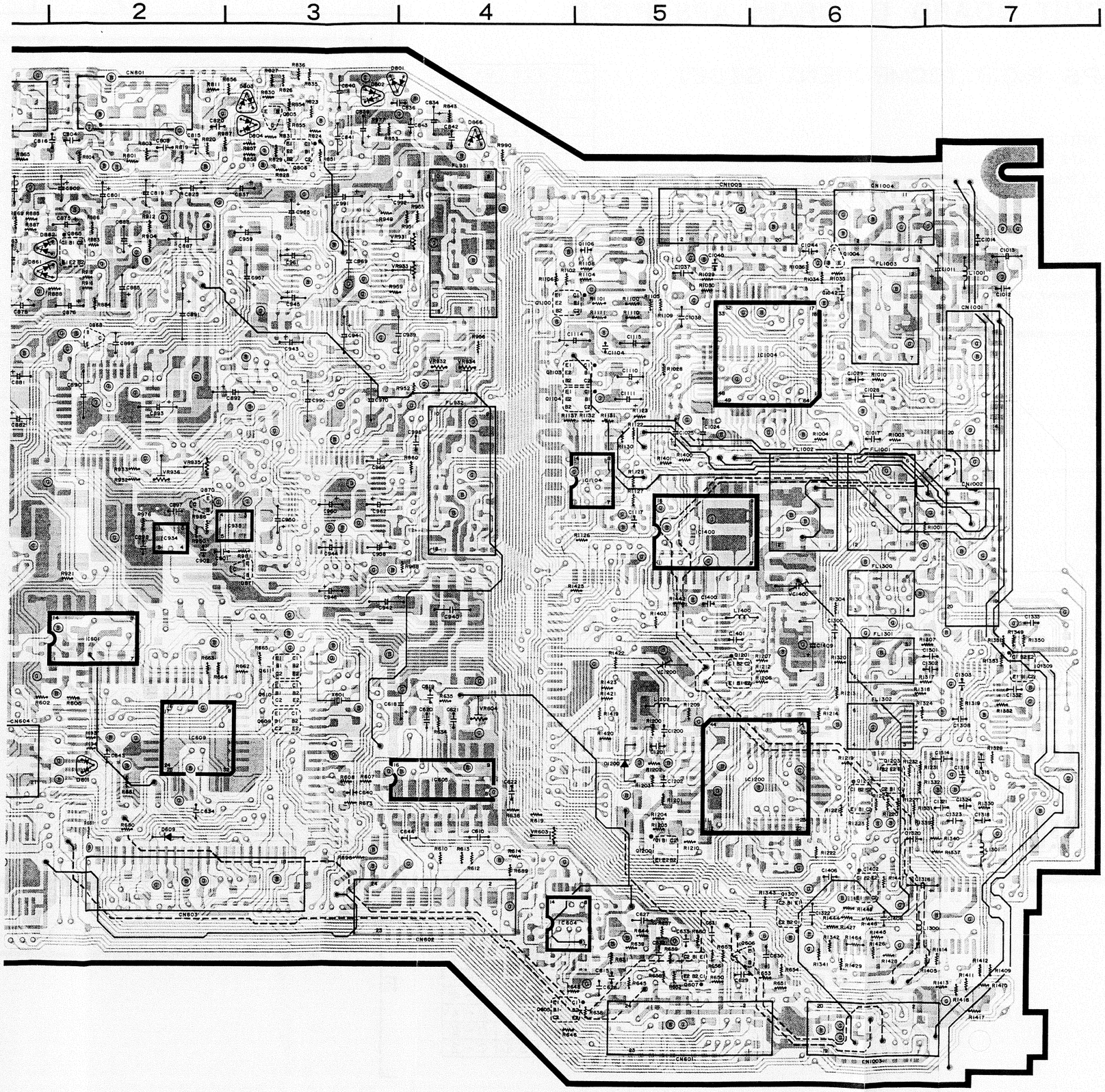
And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

Blue (———) : Power Supply layer

Blue (– – – –) : Ground layer

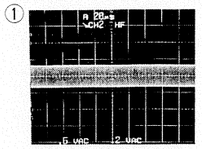
D608	E-2
D609	E-2
D801	A-3
D802	A-3
D803	A-3
D804	A-3
D861	B-1
D862	B-1
D866	A-4
D1200	E-5
IC601	D-2
IC604	F-5
IC605	E-4
IC609	E-2
IC934	C-2
IC935	C-3
IC1004	B-6
IC1104	C-5
IC1200	E-6
IC1400	C-5
Q605	F-4
Q606	F-6
Q607	F-5
Q609	D-3
Q610	D-3
Q611	D-3
Q805	A-3
Q806	A-3
Q812	A-1
Q865	B-2
Q868	B-2
Q870	C-2
Q871	D-3
Q875	E-1
Q876	E-1
Q1004	B-6
Q1100	B-4
Q1103	B-4
Q1104	C-4
Q1200	E-5
Q1201	D-5
Q1202	E-6
Q1203	E-6
Q1307	E-6
Q1309	D-7
Q1402	E-6
VC1200	D-5
VC1400	D-6
VR603	E-4
VR604	D-4
VR931	B-4
VR932	B-4
VR933	B-4
VR934	B-4
VR935	C-2
VR936	C-2

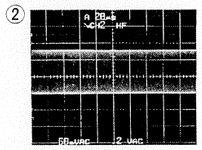


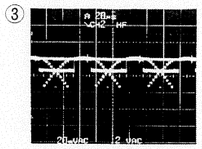


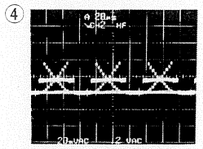
SIGNAL WAVEFORMS

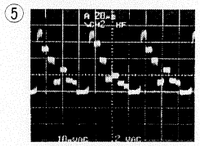
APS P.C.B.
(PROCESS SECTION)

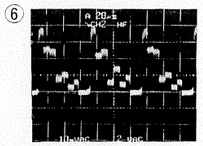
① 

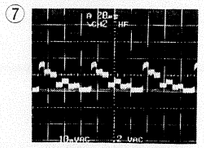
② 

③ 
(GRAY SCALE)

④ 
(GRAY SCALE)

⑤ 
(COLOR BAR)

⑥ 
(COLOR BAR)

⑦ 
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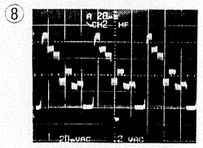
⑧ 
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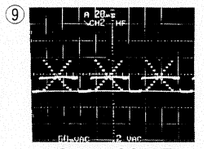
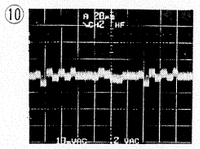
⑨ 
(GRAY SCALE)

⑩ 
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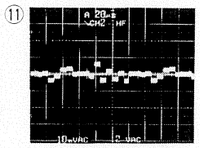
⑪ 
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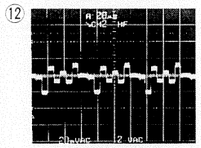
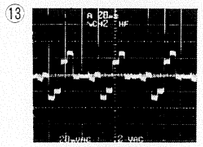
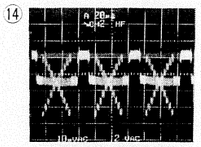
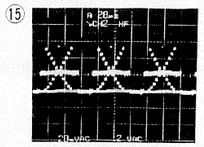
⑫ 
(COLOR BAR)

⑬ 
(COLOR BAR)

⑭ 
(GRAY SCALE)

⑮ 
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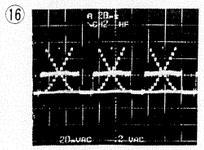
⑯ 
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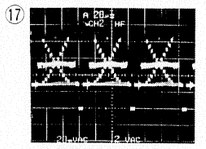
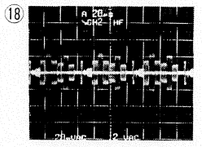
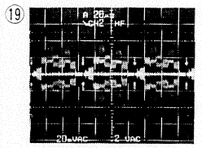
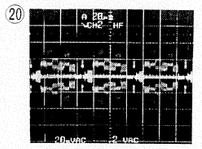
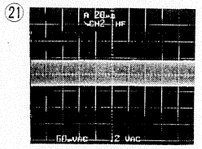
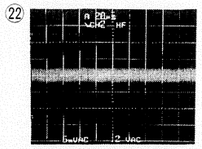
⑰ 
(GRAY SCALE)

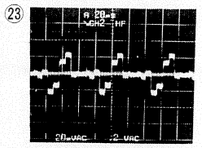
⑱ 
(COLOR BAR)

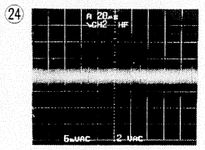
⑲ 
(COLOR BAR)

⑳ 
(COLOR BAR)

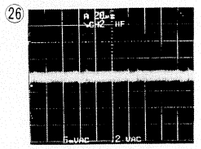
㉑ 

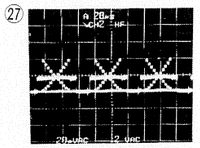
㉒ 

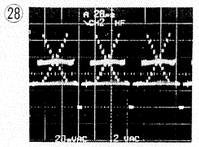
㉓ 
(COLOR BAR)

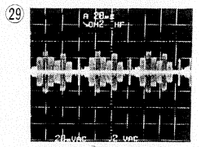
㉔ 

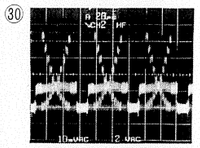
㉕ 
(COLOR BAR)

㉖ 

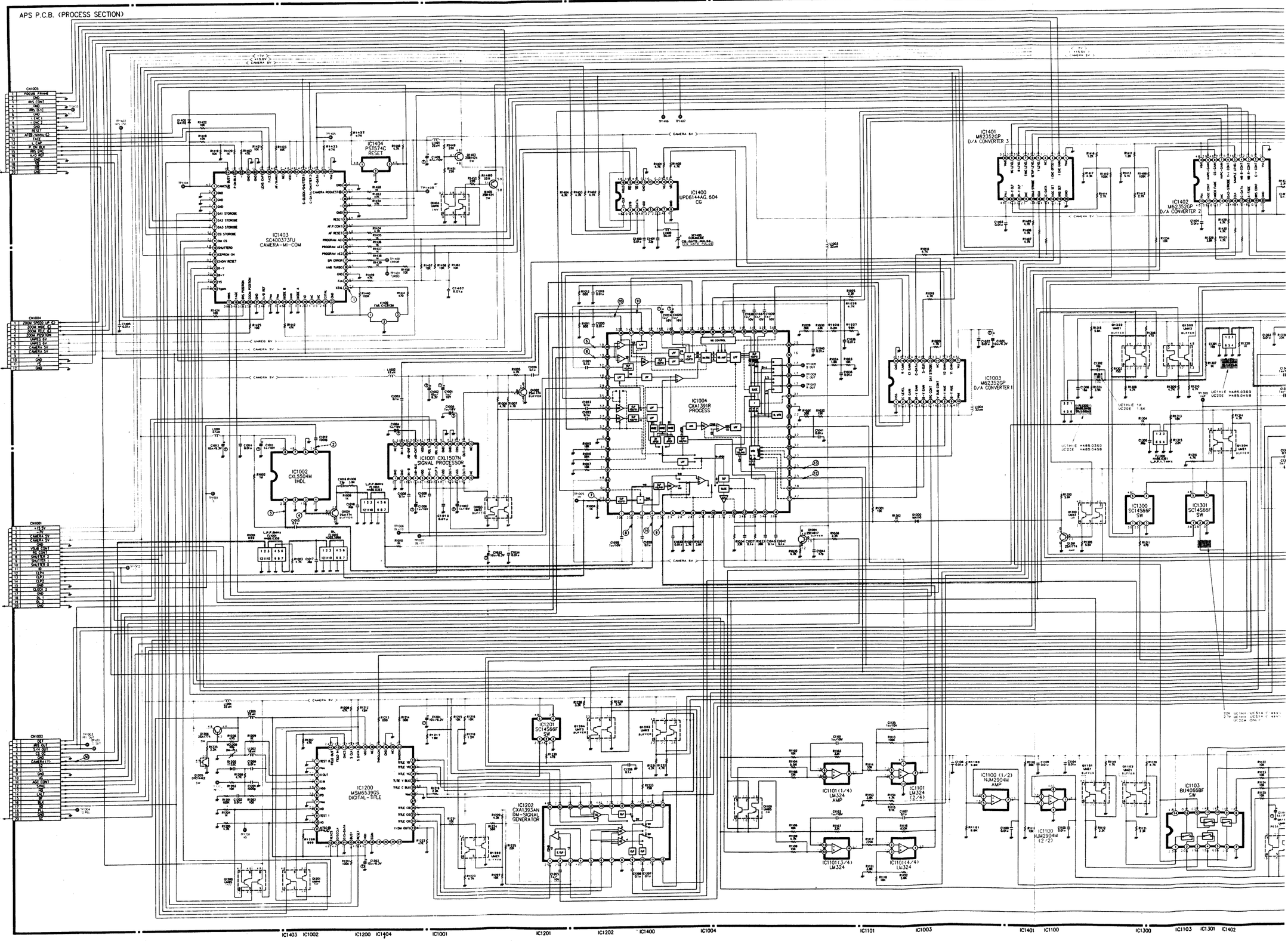
㉗ 
(GRAY SCALE)

㉘ 
(GRAY SCALE)

㉙ 
(COLOR BAR)

㉚ 
(GRAY SCALE)

SCHEMATIC DIAGRAM APS P.C.B.(PROCESS SECTION)



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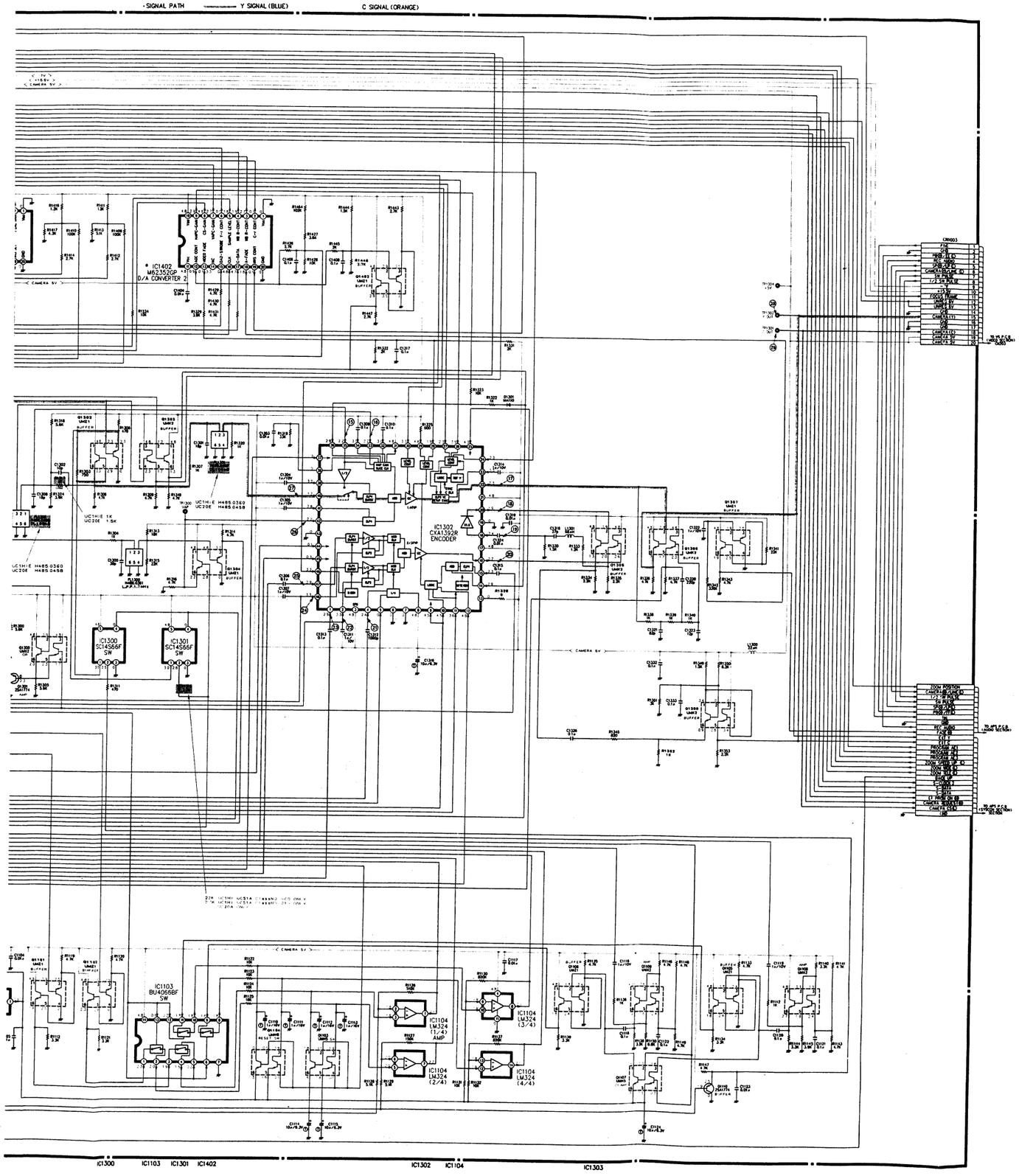


CIRCUIT BOARD DIAGRAM APS P.C.B.

APS P.C.B. (SOLDERING SIDE)

< NOTICE >

APS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

O : Soldering side ⟷ Component side

Ⓖ : Soldering side (Component side) ⟷ Ground

Ⓑ : Soldering side (Component side) ⟷ Power Supply

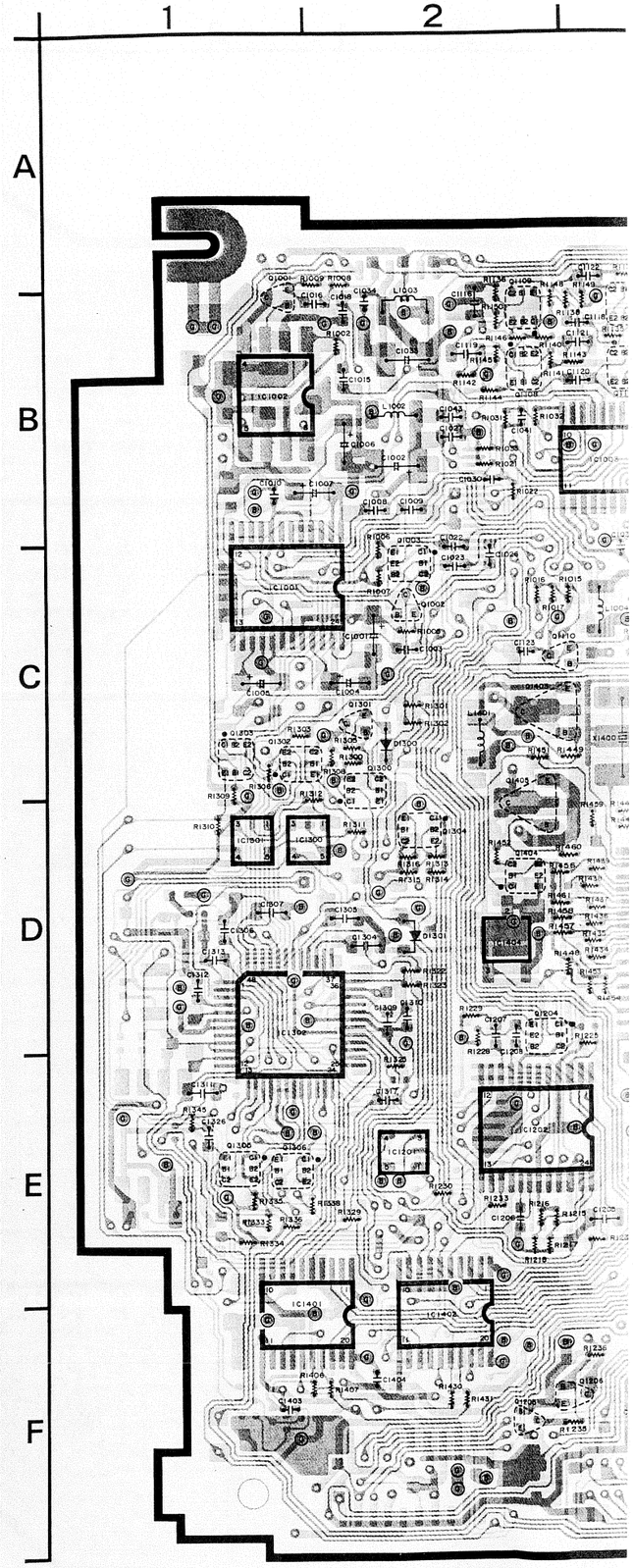
And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

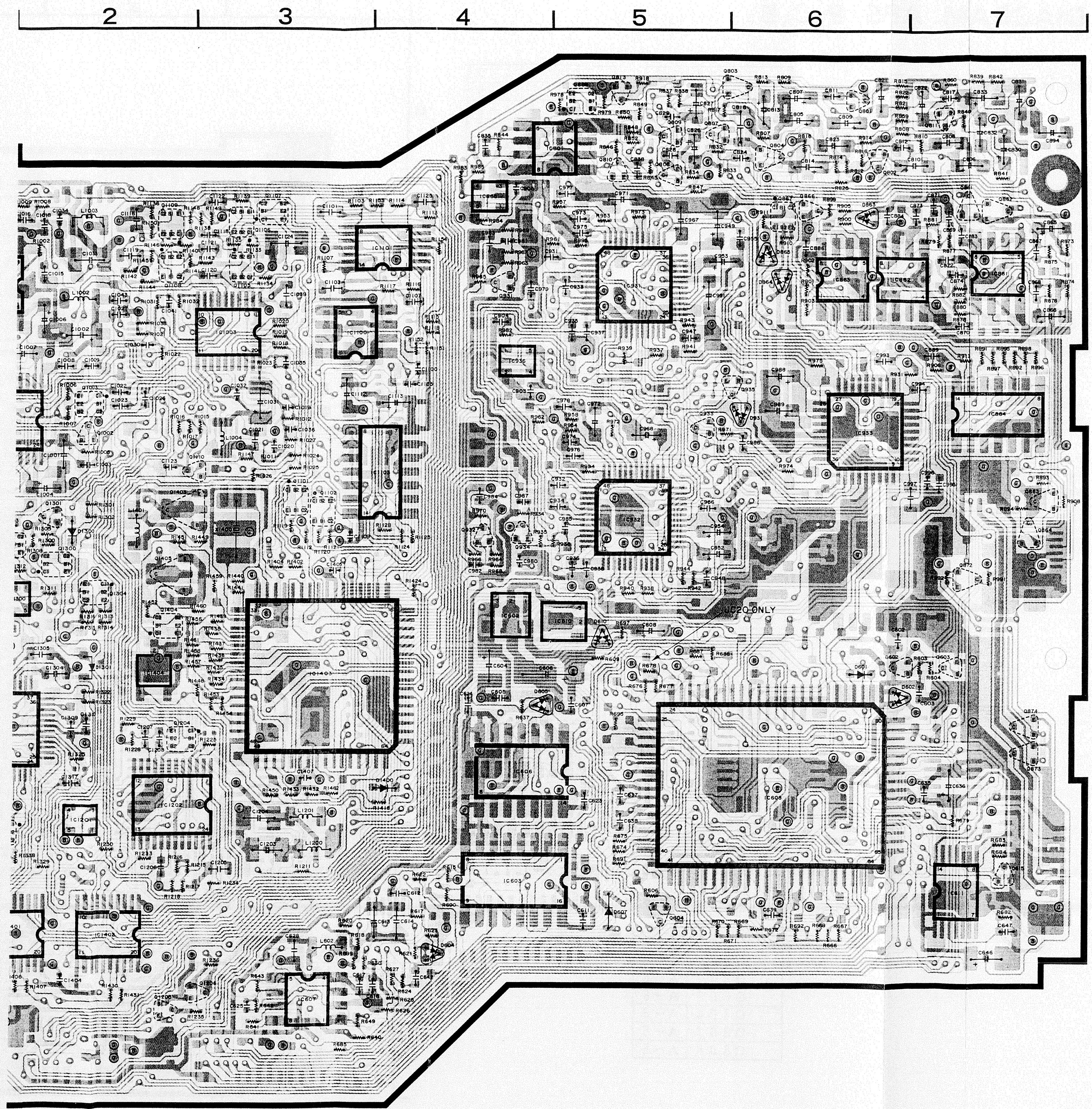
Blue (———) : Power Supply layer

Blue (– – – –) : Ground layer

D601	D-6
D602	D-6
D604	F-4
D605	D-4
D607	E-5
D610	D-5
D863	A-6
D864	B-6
D865	B-6
D931	C-6
D1300	C-2
D1301	D-2
D1400	E-4
IC602	D-4
IC603	E-4
IC606	E-4
IC607	F-3
IC608	E-6
IC610	D-5
IC611	E-7
IC801	A-5
IC861	B-7
IC862	B-6
IC863	B-6
IC864	C-7
IC865	A-4
IC931	B-5
IC932	C-5
IC933	C-7
IC936	B-4
IC1001	C-1
IC1002	B-1
IC1003	B-3
IC1100	B-3
IC1101	B-4
IC1103	C-4
IC1201	E-2
IC1202	E-2
IC1300	D-1
IC1301	D-1
IC1302	D-1
IC1401	E-1
IC1402	F-2
IC1403	D-3
IC1404	D-2
Q602	D-6
Q603	D-7
Q604	E-5
Q615	E-7
Q801	A-6
Q802	A-6
Q803	A-6
Q804	A-6
Q807	A-5
Q808	A-5

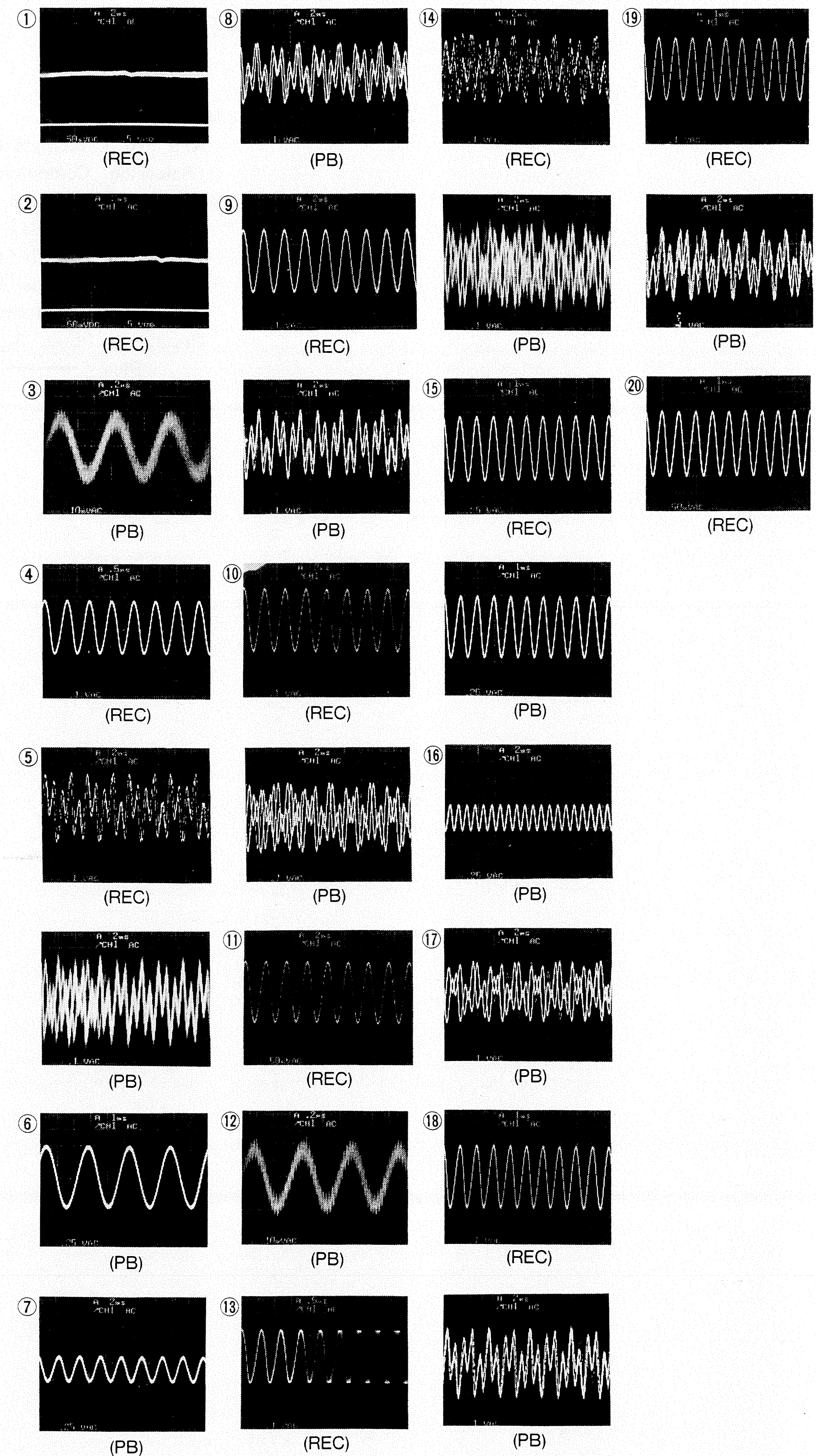
Q809	A-5
Q810	A-5
Q811	A-7
Q813	A-5
Q861	A-7
Q862	A-7
Q863	C-7
Q864	C-7
Q866	A-6
Q867	B-6
Q869	A-5
Q872	D-7
Q873	E-7
Q874	D-7
Q931	B-4
Q932	C-4
Q933	C-5
Q934	C-4
Q935	B-6
Q1001	A-1
Q1002	C-2
Q1003	C-2
Q1101	C-3
Q1102	C-3
Q1105	B-3
Q1106	B-3
Q1107	A-3
Q1108	B-2
Q1109	B-2
Q1110	C-2
Q1204	D-2
Q1205	F-2
Q1206	F-3
Q1300	C-2
Q1301	C-2
Q1302	C-1
Q1303	C-1
Q1304	D-2
Q1305	E-1
Q1306	E-1
Q1403	C-2
Q1404	D-2
Q1405	C-2



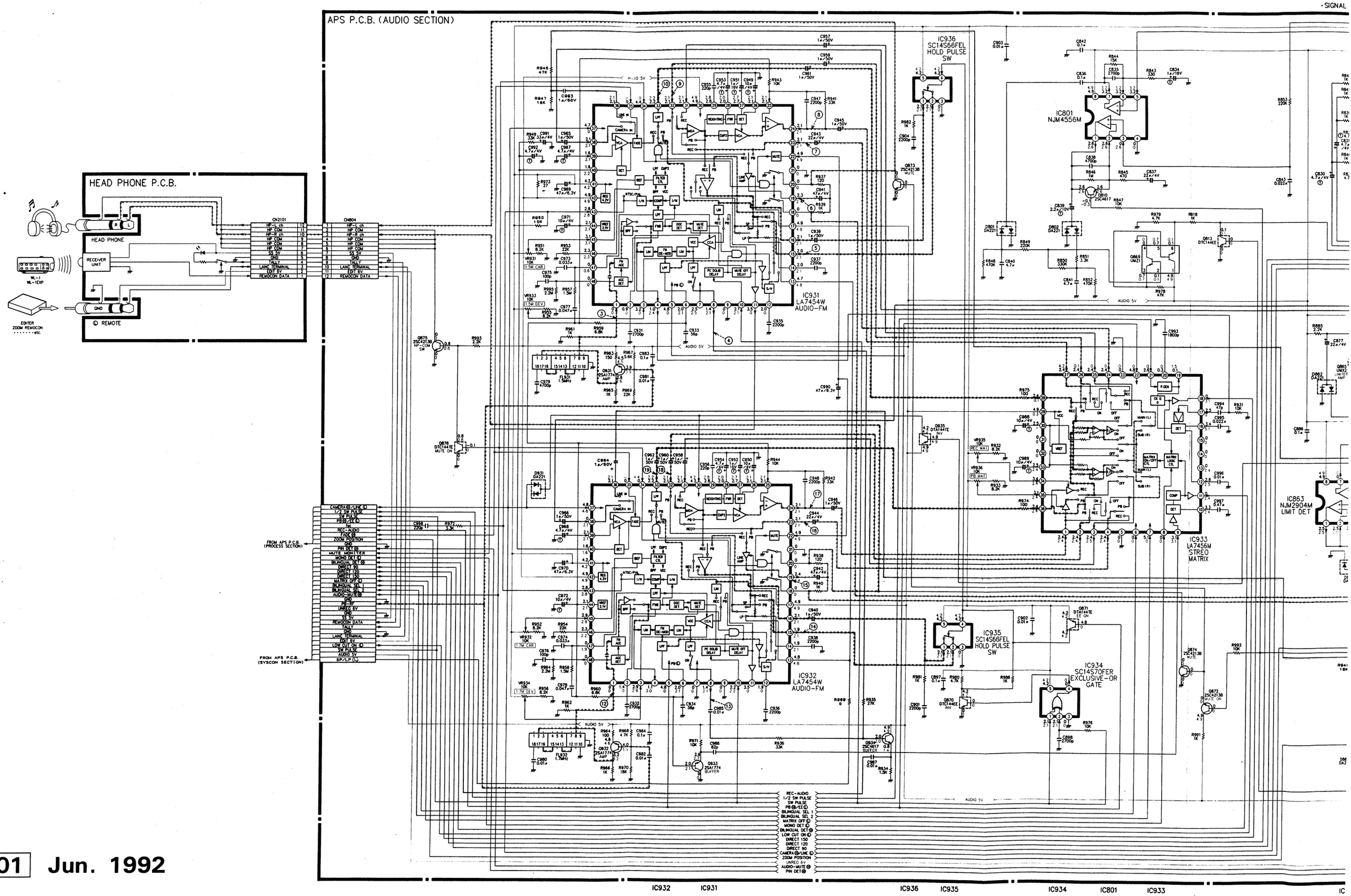


SIGNAL WAVEFORMS

APS P.C.B.
(AUDIO SECTION)



SCHEMATIC DIAGRAM APS P.C.B.(AUDIO SECTION)



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· SIGNAL PATH REC A SIGNAL (RED) PB A SIGNAL (RED)

IC936 SC14S66FEL HOLD PULSE SW

IC801 NJM4556M

IC931 LA7454W AUDIO-FM

IC935 SC14S66FEL HOLD PULSE SW

IC934 SC14S70FER EXCLUSIVE-OR GATE

IC932 LA7454W AUDIO-FM

IC933 UA7456M STREO MATRIX

IC862 NJM2043M L.P.F

IC861 NJM2043M MIC-AMP

IC863 NJM2904M LIMIT DET

IC864 BU4066BF CAMERA/LINE PIN DET SW

IC865 SC14SU69F INVERTER GATE

TERMINAL P.C.B.

IC2151 TK1147 5V REG (AUDIO)

UC1H1/UCS1A ONLY

TO VS P.C.B. (VIDEO SECTION) CN201

TO DC JACK

MIC

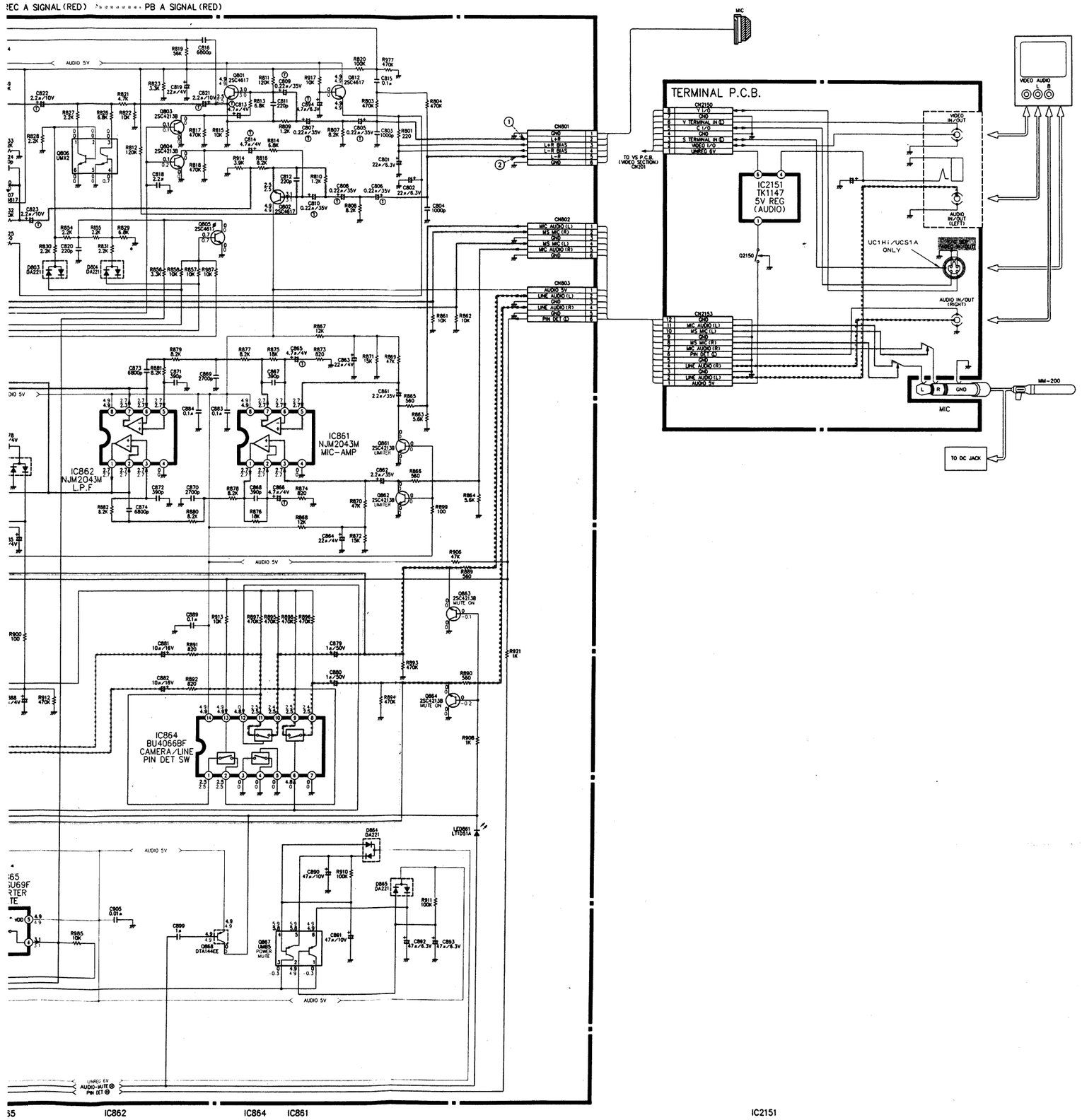
AUDIO 5V

REC-AUDIO
/2 SW PULSE
SW PULSE
PB ⑧/REC ⑨
LINQUAL SEL 1
LINQUAL SEL 2
MATRIX OFF ⑦
MONO DET ⑥
LINQUAL DET ⑤
2W CUT ON ④
DIRECT 150
DIRECT 120
DIRECT 90
MCRA ③/VME ②
ZOOM POSITION
UNREG 5V
AUDIO-MUTE ⑩
PIN DET ⑪

UNREG 5V
AUDIO-MUTE ⑩
PIN DET ⑪

IC936 IC935 IC934 IC801 IC933 IC863 IC865 IC862 IC864 IC861 IC2151

EC A SIGNAL (RED) PB A SIGNAL (RED)



IC862 IC864 IC861 IC2151

CIRCUIT BOARD DIAGRAM VS P.C.B.

VS P.C.B. (COMPONENT SIDE)

< NOTICE >

VS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

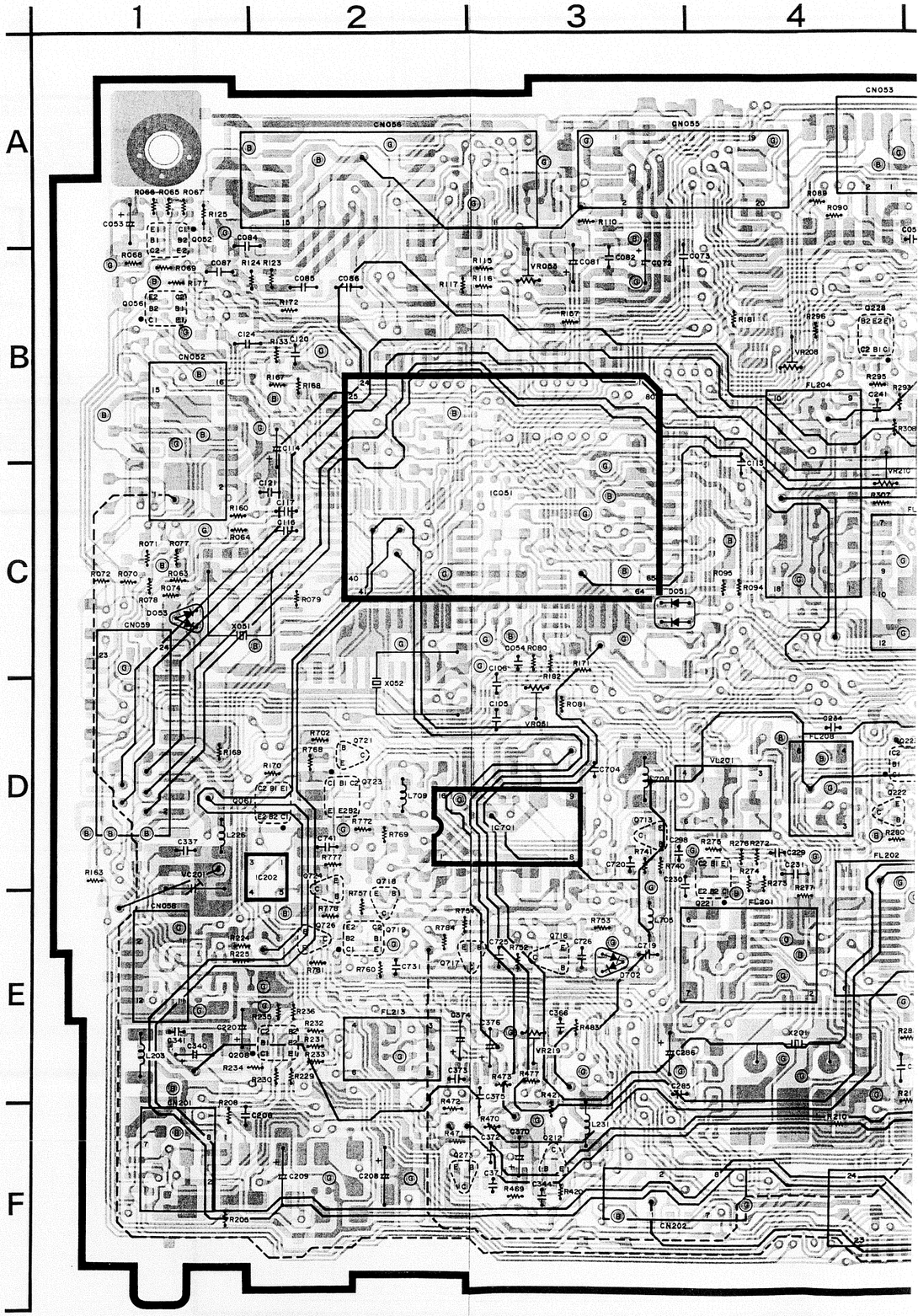
○ : Soldering side ⟷ Component side
Ⓖ : Soldering side (Component side) ⟷ Ground
Ⓑ : Soldering side (Component side) ⟷ Power Supply

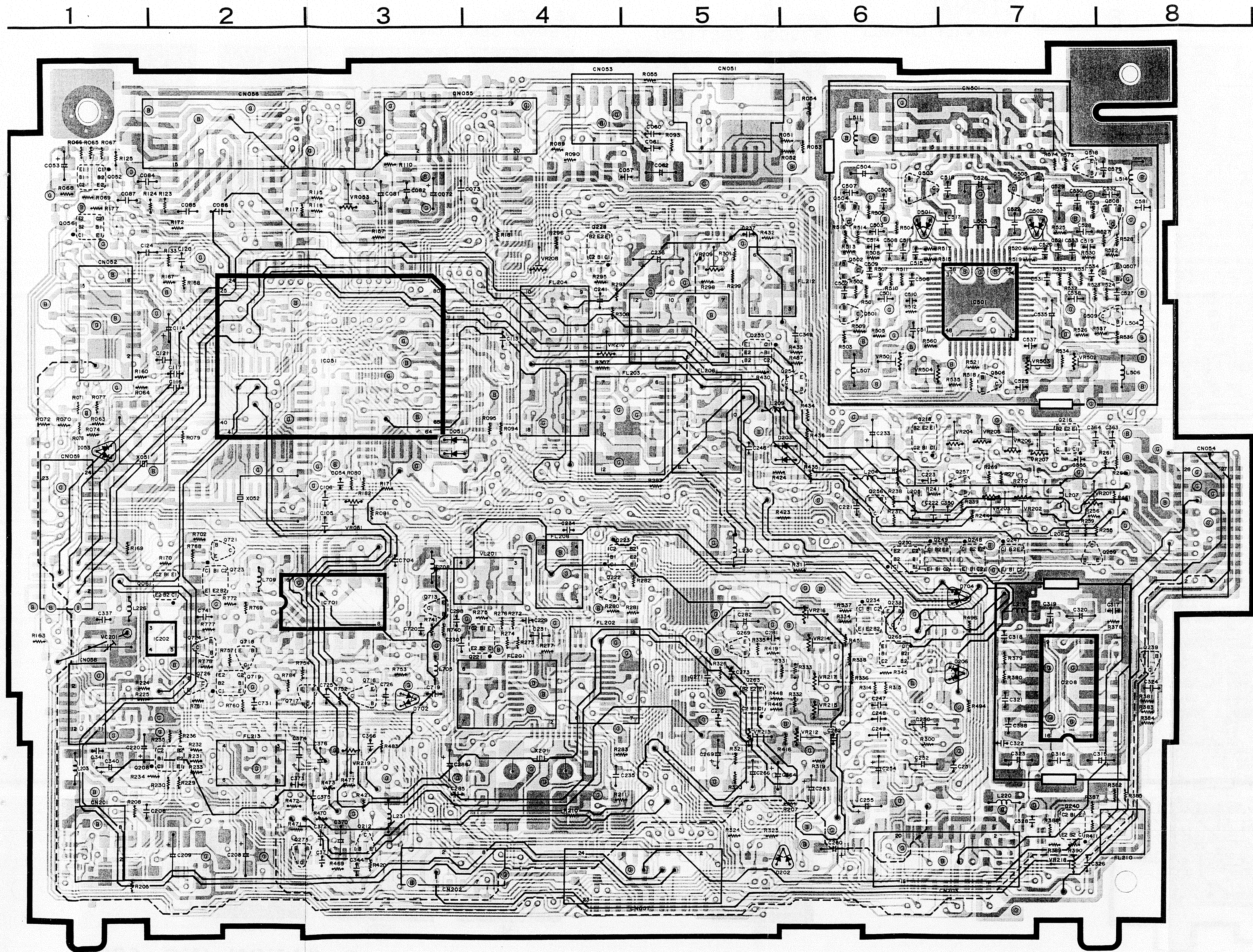
And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

Blue (———) : Power Supply layer
Blue (– – – –) : Ground layer

D051	C-3
D053	C-1
D202	F-6
D203	C-6
D206	E-7
D501	B-6
D502	B-7
D702	E-3
D704	D-7
IC051	C-3
IC202	D-2
IC208	E-7
IC501	B-7
IC701	D-3
Q052	A-1
Q056	B-1
Q061	D-2
Q208	E-1
Q212	F-3
Q216	C-7
Q218	C-6
Q221	D-4
Q222	D-4
Q223	D-4
Q228	B-4
Q233	D-6
Q234	D-6
Q239	E-8
Q240	F-7
Q247	D-7
Q248	D-7
Q249	D-7
Q250	D-6
Q253	C-5
Q254	C-6
Q256	D-6
Q257	C-7
Q259	D-7
Q263	E-5
Q265	E-6
Q269	D-5
Q273	F-2
Q501	B-6
Q502	B-6
Q503	B-6
Q504	B-6
Q505	B-7
Q506	C-7
Q507	B-8
Q508	B-8
Q509	B-8
Q518	A-7
Q713	D-3
Q716	E-3
Q717	E-2

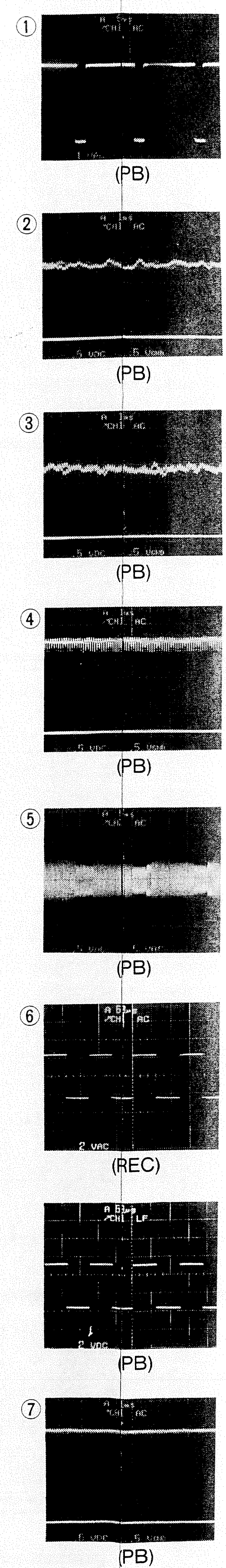
Q718	E-2
Q719	E-2
Q721	D-2
Q723	D-2
Q724	D-2
Q726	E-2
VC201	D-1
VR051	D-3
VR053	B-3
VR201	D-8
VR202	D-7
VR203	D-7
VR204	C-7
VR205	C-7
VR206	C-7
VR207	C-7
VR208	B-4
VR209	B-5
VR210	C-4
VR212	E-6
VR213	E-5
VR214	E-6
VR215	E-6
VR216	D-6
VR217	E-6
VR218	F-7
VR219	E-3
VR501	C-6
VR502	C-7
VR503	C-7
VR504	C-6



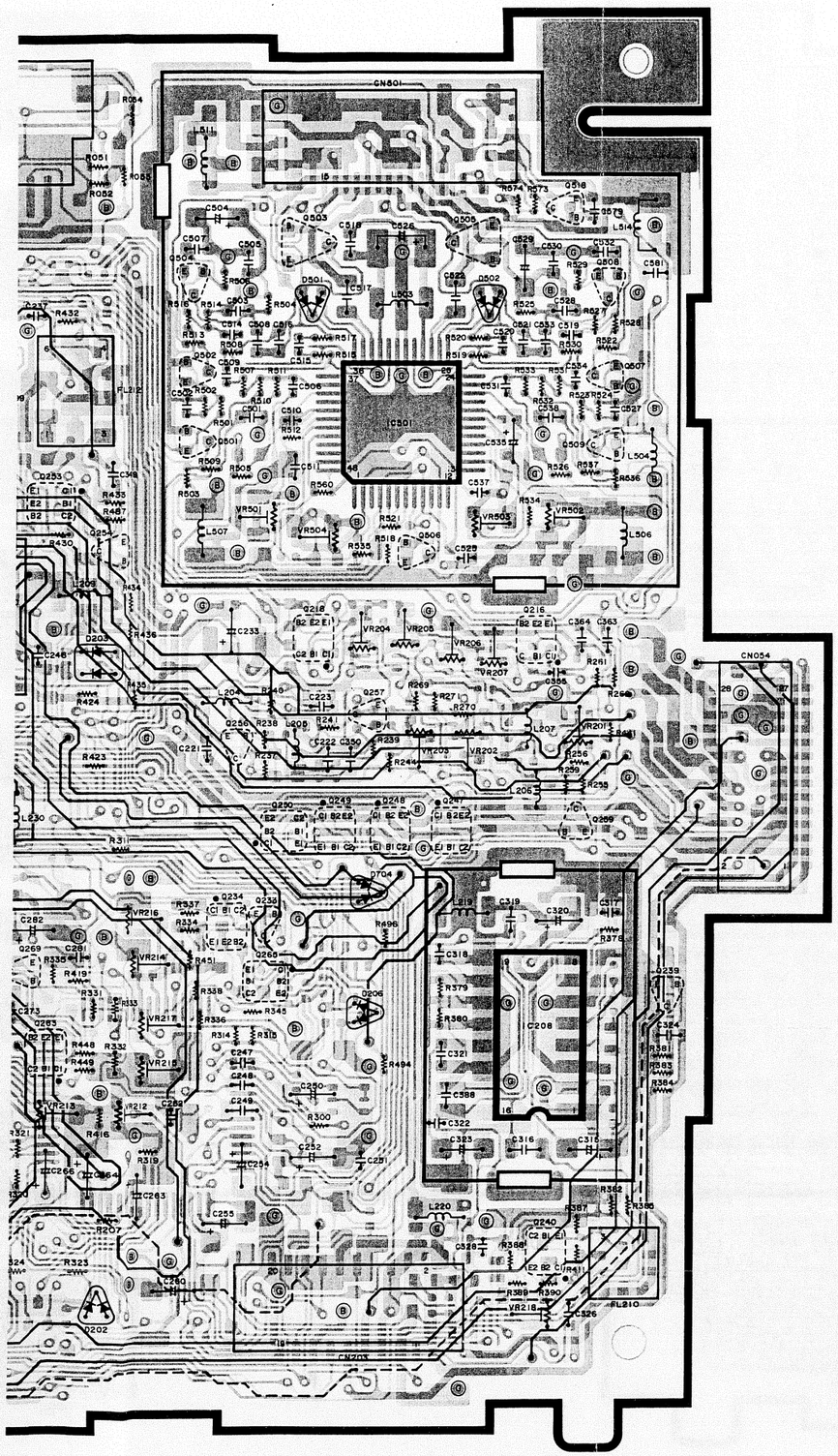


SIGNAL WAVEFORMS

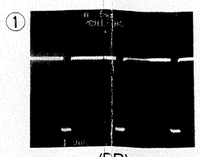
APS P.C.B.
(SYSCON SE

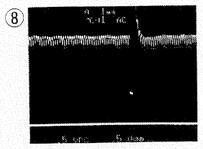


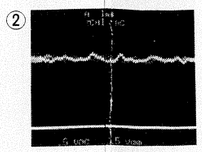
SIGNAL WAVEFORMS



APS P.C.B. (SYSCON SECTION)


① (PB)


⑧ (PB)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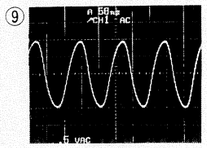
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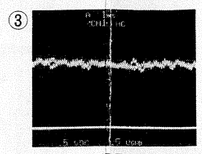
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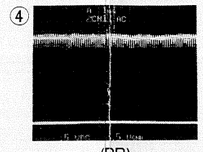
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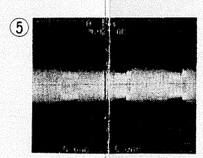
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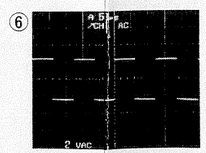
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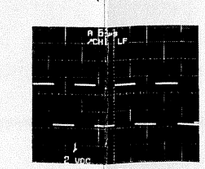
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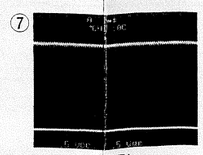
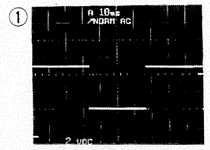

⑦ (PB)

VS P.C.B. (SERVO SECTION)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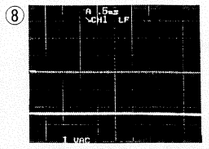
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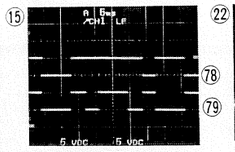
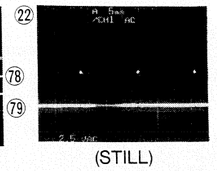
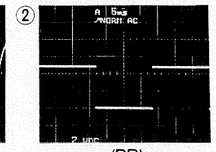

⑮ ⑱ (PB)


㉒ ㉙ (STILL)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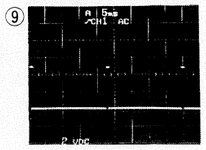
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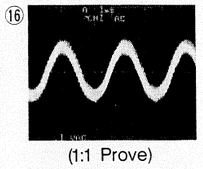
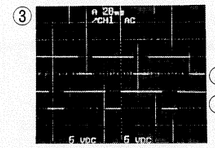

⑯ (1:1 Prove)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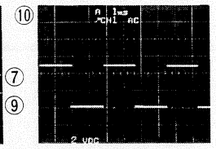
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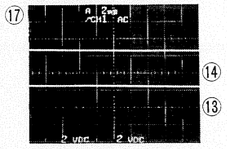
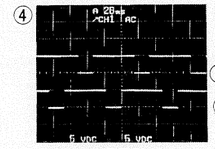
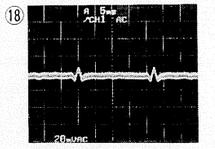

⑰ ⑭ ⑬


④ ⑧ ⑩ (REC)


⑪ (PB)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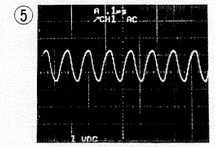
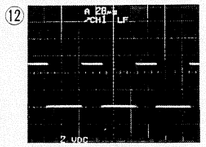
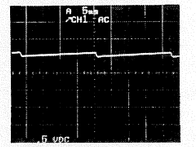

⑤ (REC)


⑫ (PB)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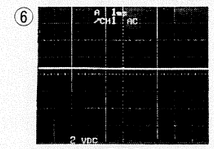
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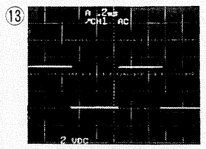
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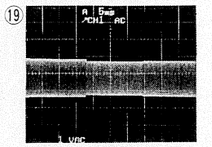
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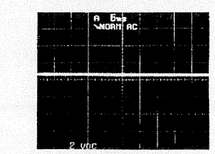
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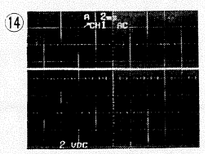
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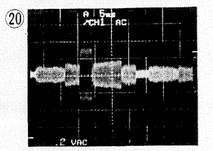
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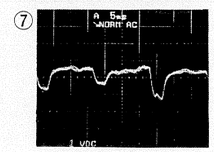
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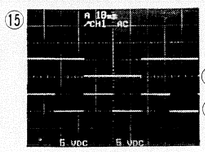
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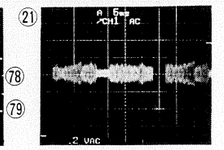
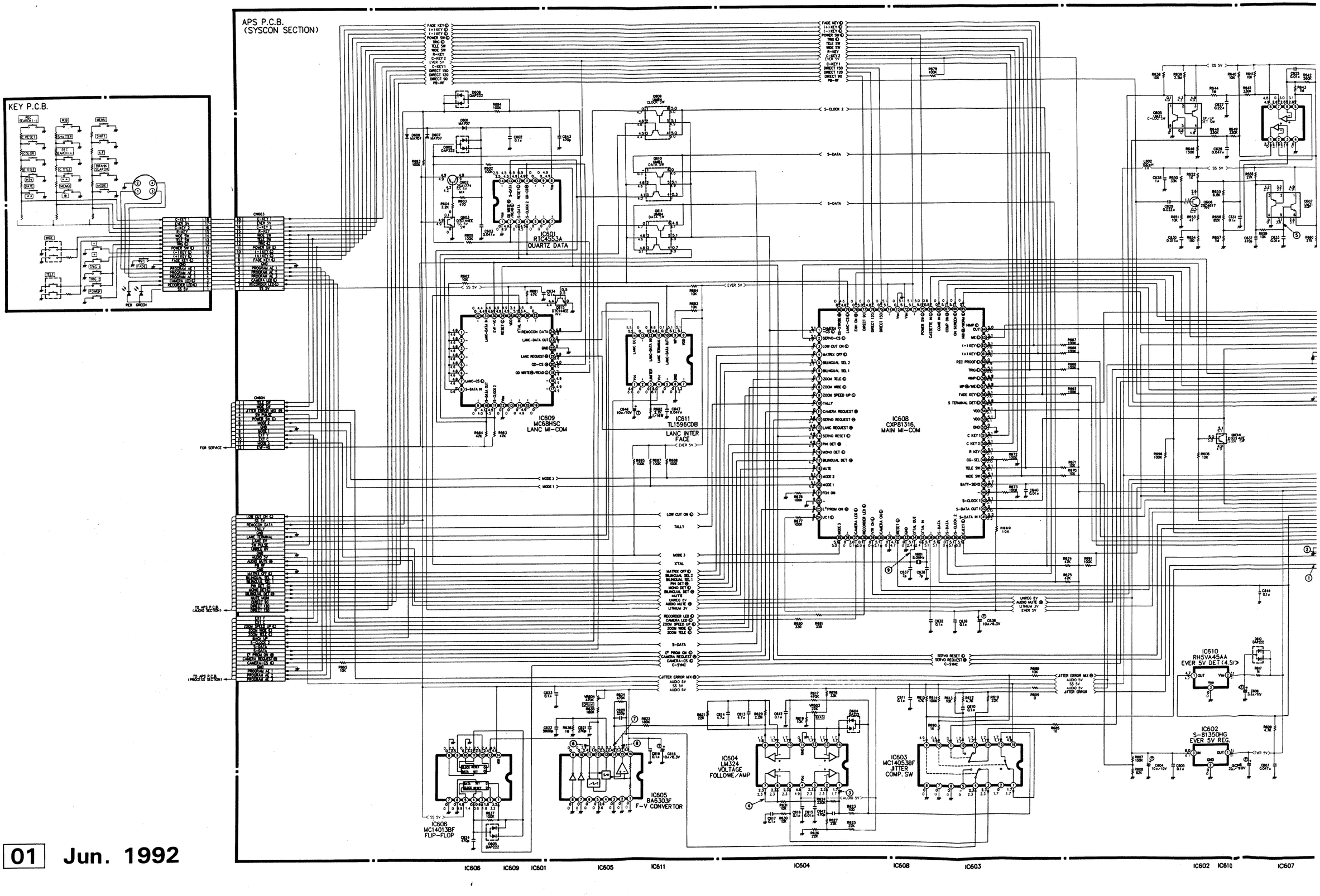

㉑ ㉘ ㉙ (PB)

SCHEMATIC DIAGRAM APS P.C.B.(SYSCON SECTION)-VS P.C.B.(SERVO SECTION)



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RVO SECTION)

· SIGNAL PATH

VS P.C.B. (SERVO SECTION)

IC607
UPC1393G2
SP/LP & C-LOG DET

IC608
CXP81316
MAIN MI-COM

IC610
RH5VA45AA
EVER 5V DET (4.5V)

IC602
S-81350HG
EVER 5V REG.

IC603
MC14053BF
JITTER COMP. SW

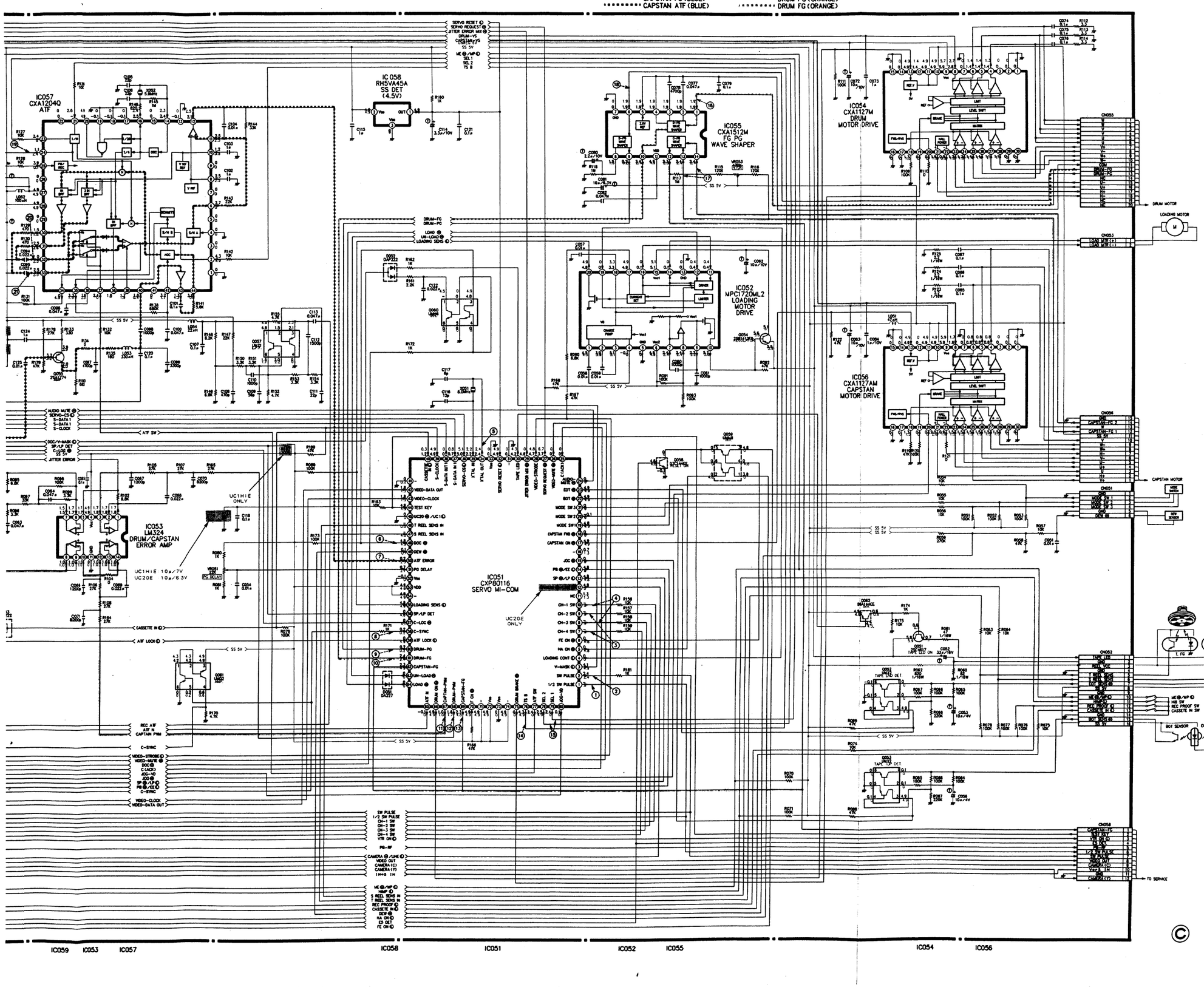
IC057
CXA1204Q
ATF

IC058
RH5VA45A
SS DET (4.5V)

IC053
LM324
DRUM/CAPSTAN ERROR AMP

IC051
CXP80116
SERVO MI-COM

IC608 IC603 IC602 IC610 IC607 IC059 IC053 IC057 IC058 IC051



CIRCUIT BOARD DIAGRAM VS P.C.B.

VS P.C.B. (SOLDERING SIDE)

< NOTICE >

VS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

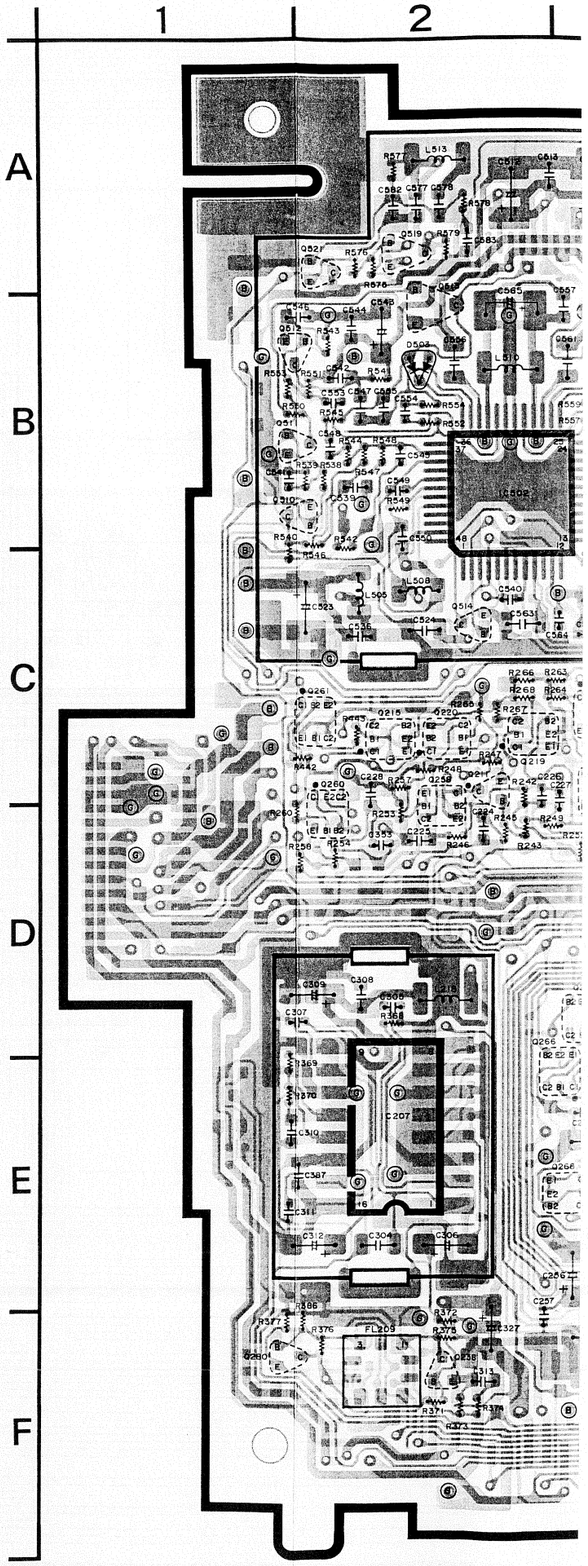
○ : Soldering side ⟷ Component side
Ⓖ : Soldering side (Component side) ⟷ Ground
Ⓑ : Soldering side (Component side) ⟷ Power Supply

And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

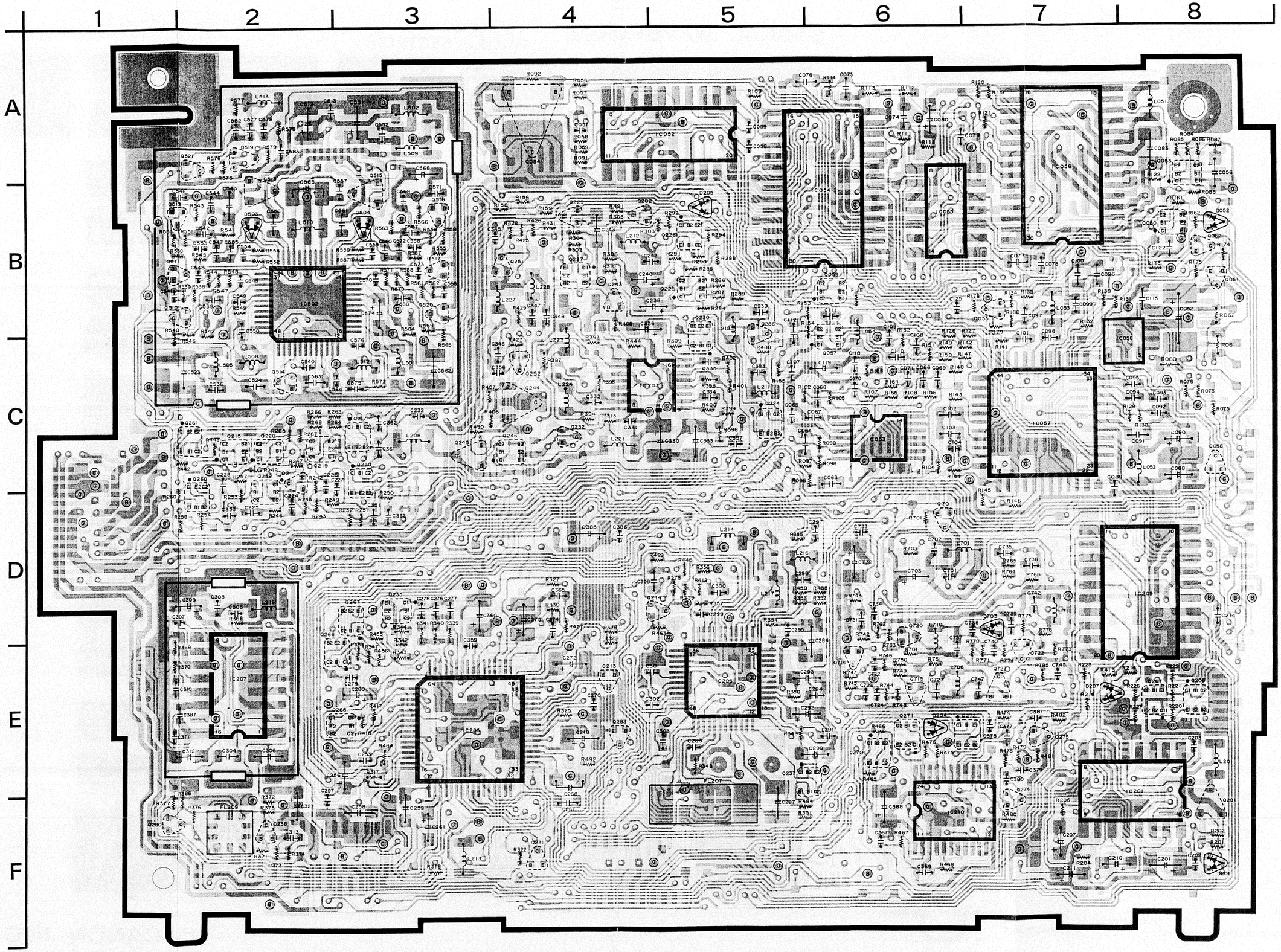
Blue (———) : Power Supply layer
Blue (– – – –) : Ground layer

D052	B-8
D201	F-8
D204	E-6
D205	B-5
D207	E-8
D503	B-2
D504	B-3
D703	D-7
IC052	A-5
IC053	C-6
IC054	B-6
IC055	B-6
IC056	A-7
IC057	C-7
IC058	C-8
IC201	E-8
IC203	C-4
IC205	E-3
IC206	E-5
IC207	E-2
IC209	D-8
IC210	F-6
IC502	B-2
Q051	B-8
Q053	A-8
Q054	A-4
Q055	B-7
Q057	C-6
Q058	C-8
Q059	B-6
Q060	B-8
Q062	B-8
Q201	F-8
Q206	E-8
Q207	E-8
Q210	C-3
Q211	C-2
Q213	E-4
Q214	D-5
Q215	C-2
Q217	C-3
Q219	C-2
Q220	C-2
Q224	C-5
Q225	B-5
Q226	B-5
Q227	B-4
Q229	B-4
Q230	B-5
Q231	F-4
Q232	C-4
Q235	D-3
Q237	E-5
Q238	F-2
Q243	B-4

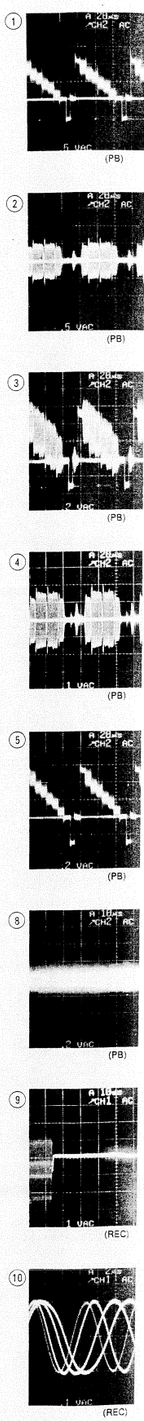
Q244	C-4
Q245	C-3
Q246	C-4
Q251	B-4
Q252	C-4
Q258	C-2
Q260	C-2
Q261	C-1
Q266	E-2
Q267	D-3
Q268	E-3
Q270	E-6
Q271	E-6
Q272	E-7
Q274	F-7
Q275	E-7
Q280	F-1
Q282	B-4
Q283	E-4
Q286	C-5
Q510	B-1
Q511	B-1
Q512	B-1
Q513	A-2
Q514	C-2
Q515	B-3
Q516	B-3
Q517	B-3
Q519	A-2
Q520	B-3
Q521	A-2
Q701	D-6
Q714	E-6
Q715	E-6
Q720	D-6
Q722	E-7
Q727	E-7

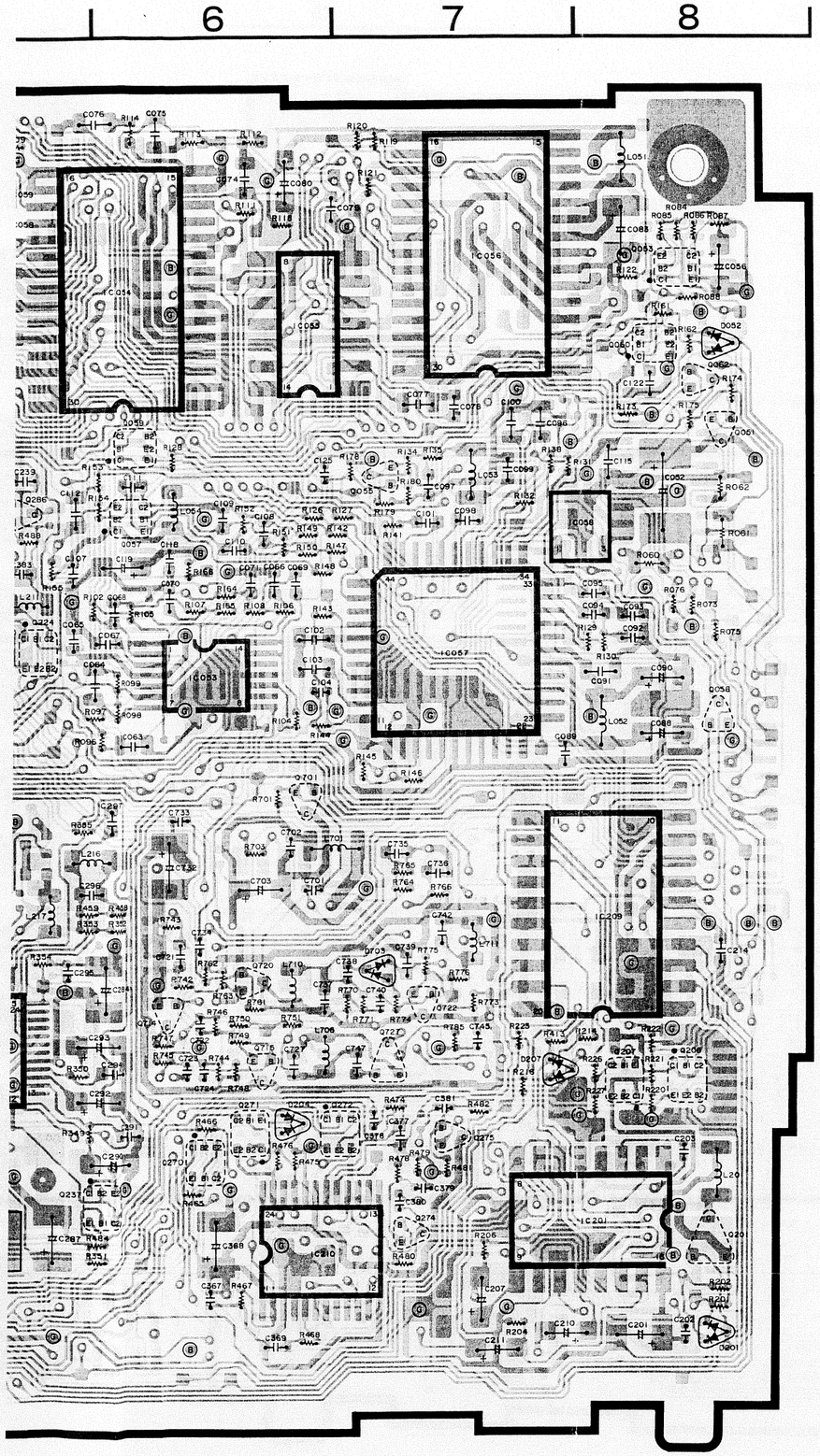


Q244	C−4
Q245	C−3
Q246	C−4
Q251	B−4
Q252	C−4
Q258	C−2
Q260	C−2
Q261	C−1
Q266	E−2
Q267	D−3
Q268	E−3
Q270	E−6
Q271	E−6
Q272	E−7
Q274	F−7
Q275	E−7
Q280	F−1
Q282	B−4
Q283	E−4
Q286	C−5
Q510	B−1
Q511	B−1
Q512	B−1
Q513	A−2
Q514	C−2
Q515	B−3
Q516	B−3
Q517	B−3
Q519	A−2
Q520	B−3
Q521	A−2
Q701	D−6
Q714	E−6
Q715	E−6
Q720	D−6
Q722	E−7
Q727	E−7



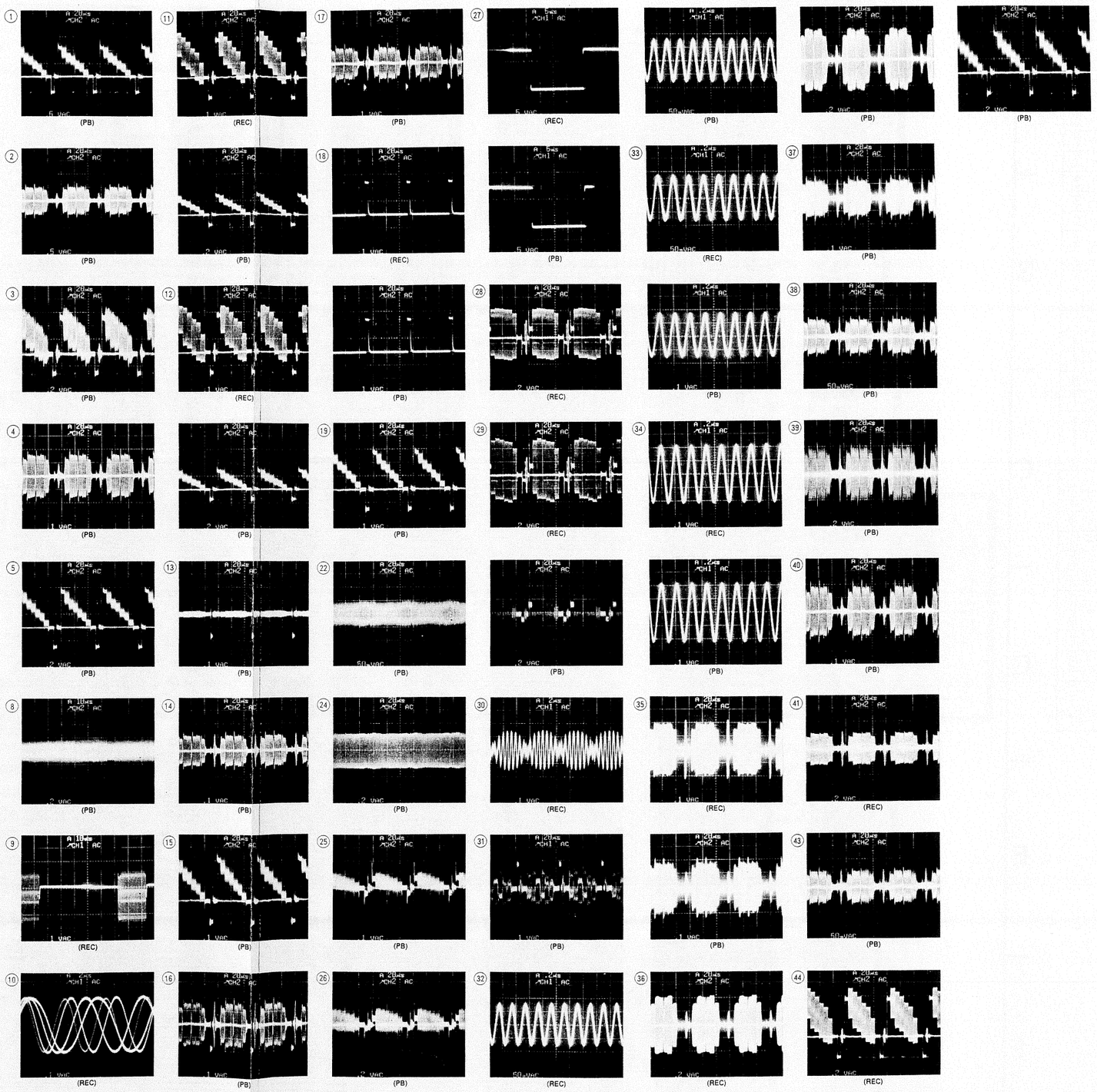
SIGNA



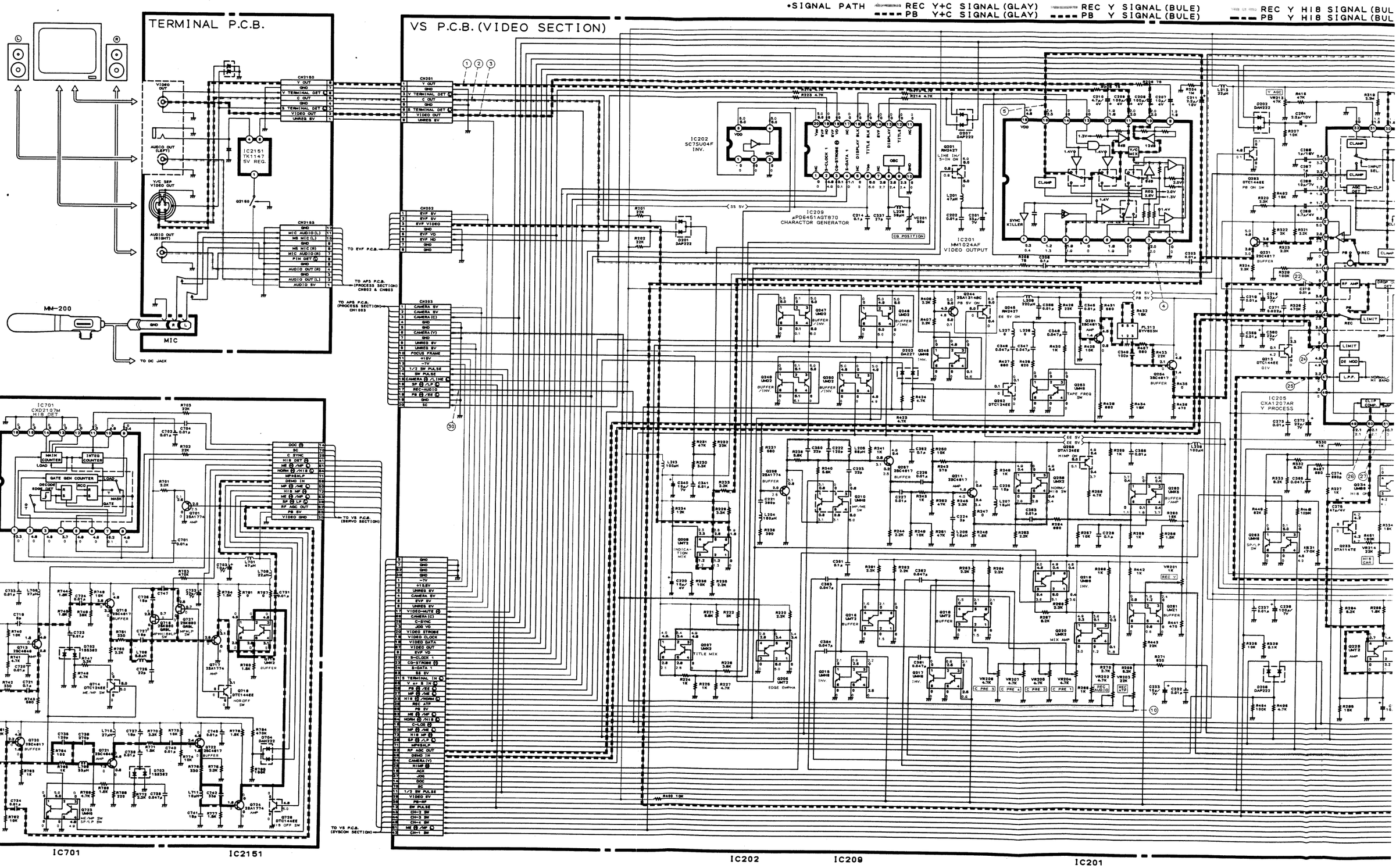


SIGNAL WAVEFORMS

VS P.C.B.
(VIDEO SECTION)



SCHEMATIC DIAGRAM VS P.C.B.(VIDEO SECTION)



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REC Y+C SIGNAL (GLAY) — REC Y SIGNAL (BULE) — REC Y HI8 SIGNAL (BULE) — REC C SIGNAL (ORANGE) — REC A SIGNAL (RED)
PB Y+C SIGNAL (GLAY) — PB Y SIGNAL (BULE) — PB Y HI8 SIGNAL (BULE) — PB C SIGNAL (ORANGE) — PB A SIGNAL (RED)

IC201 MM1024AF VIDEO OUTPUT

IC205 CXA1207AR Y PROCESS

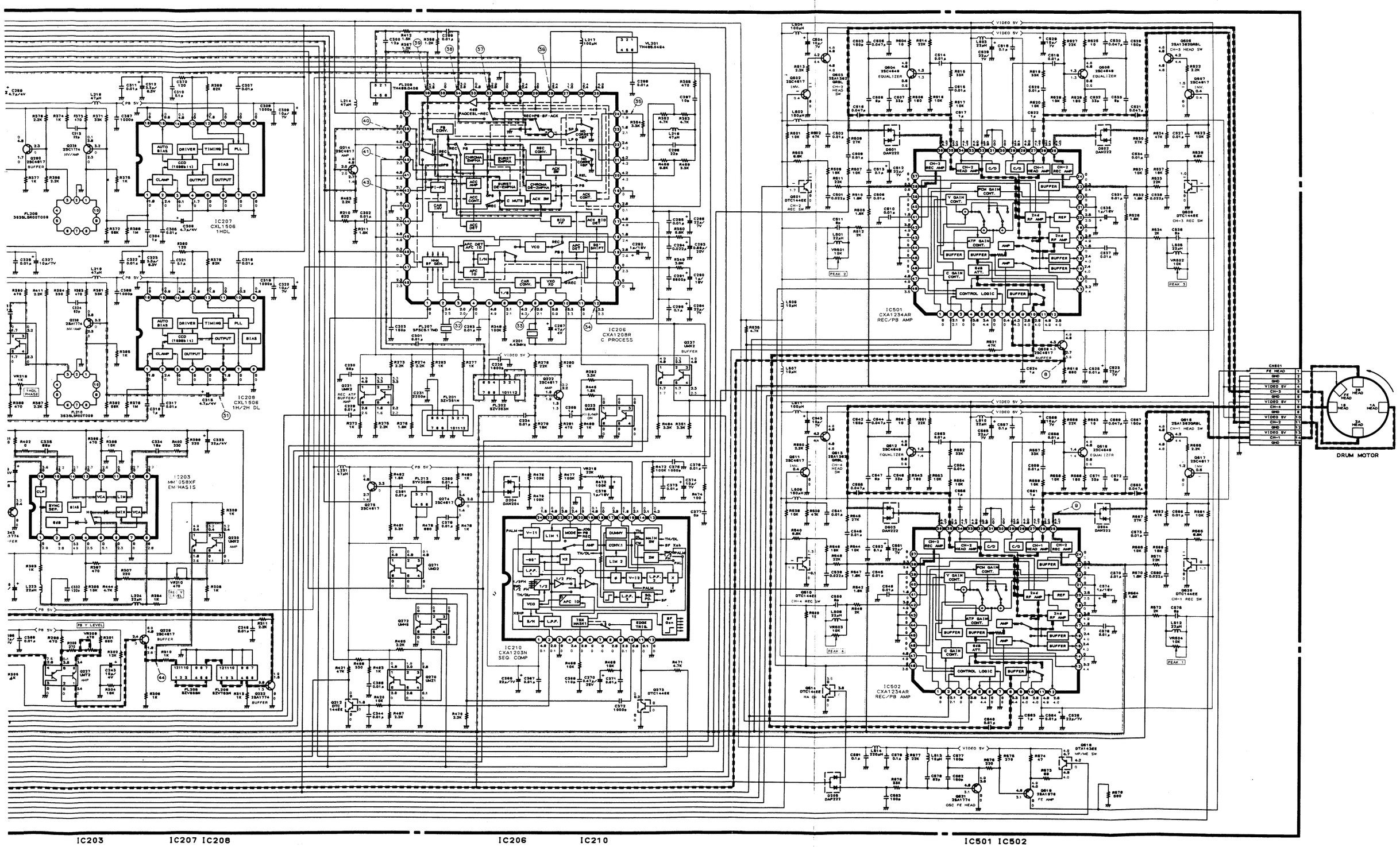
IC203 CXA1203N MM1058XF EM HA51S

IC207 CXL1506 1HDL

IC208 CXL1506 1H/2H DL

IC210 CXA1203N SEQ COMP

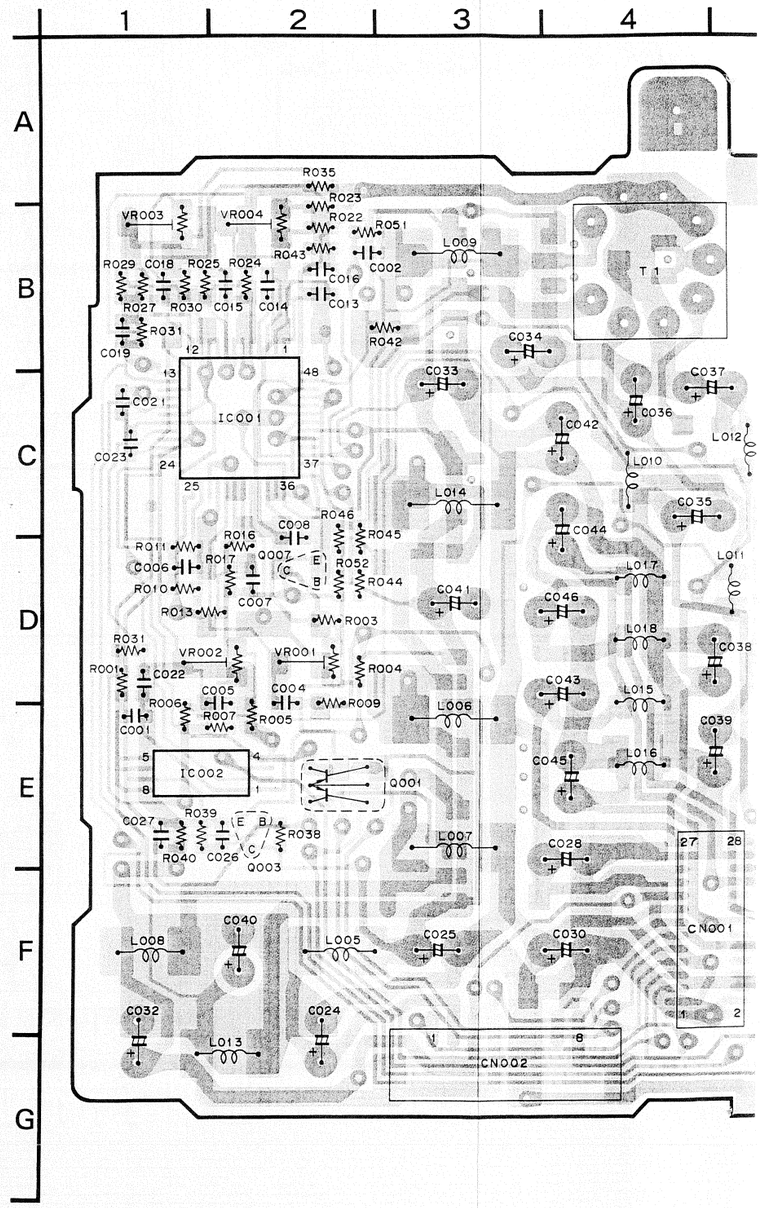
IC201 IC205 IC203 IC207 IC208 IC206



CIRCUIT BOARD DIAGRAM POWER SUPPLY P.C.B. & FUSE BATTERY P.C.B.

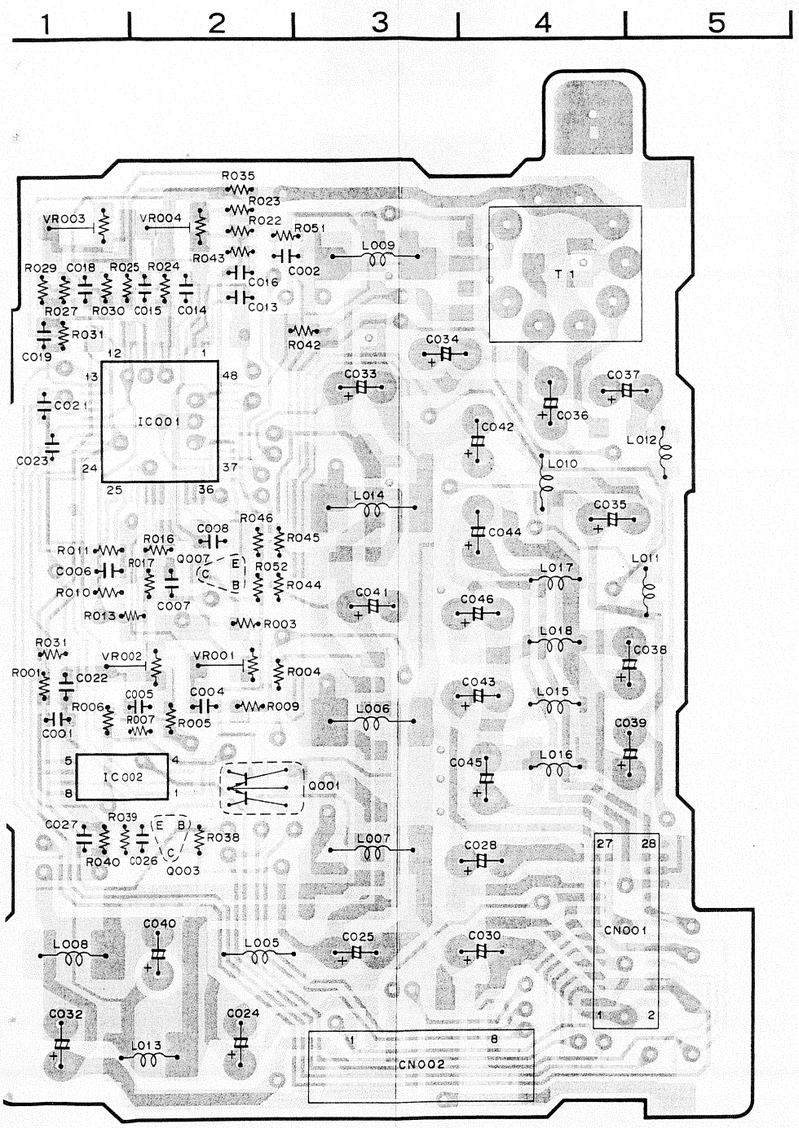
POWER SUPPLY P.C.B. (COMPONENT SIDE)

IC001	C-2
IC002	E-1
Q001	E-2
Q003	E-2
Q007	D-2
VR001	D-2
VR002	D-2
VR003	B-1
VR004	B-2



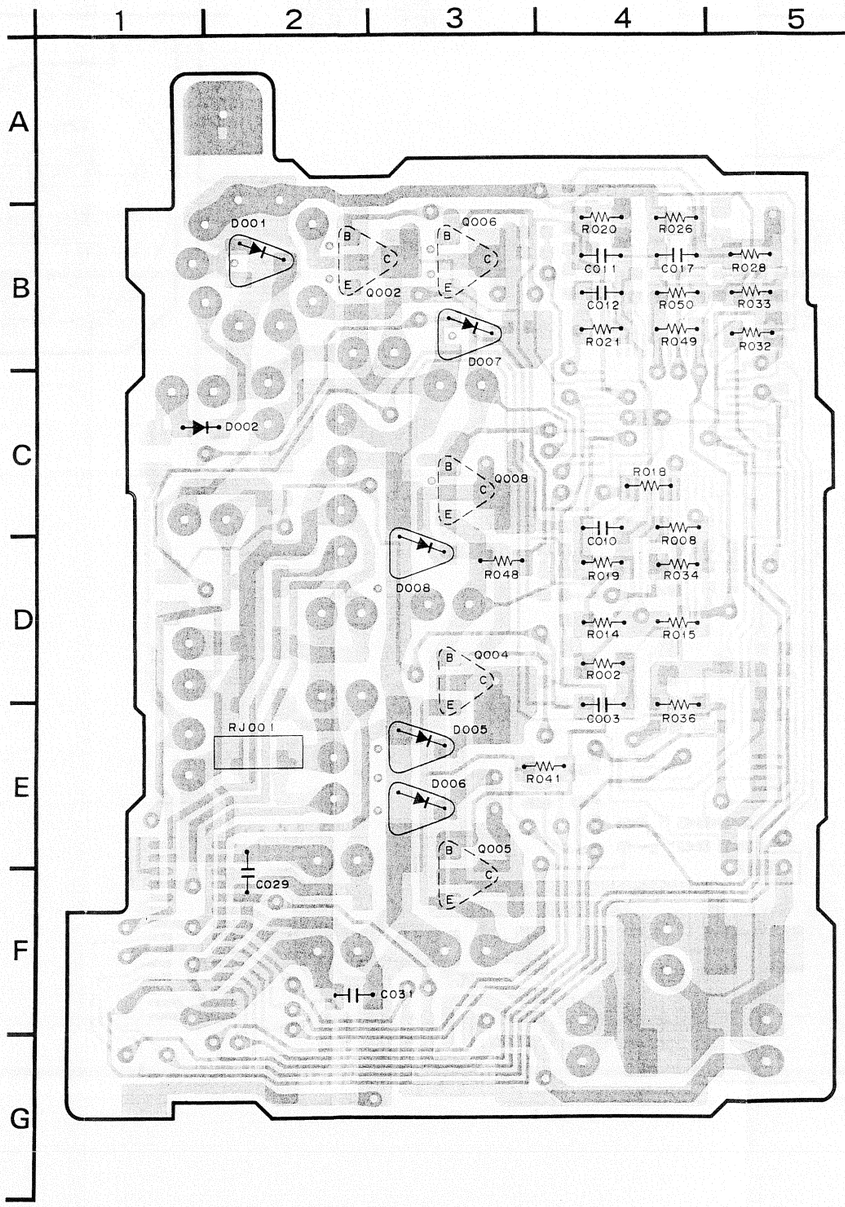
B.

P.C.B. (COMPONENT SIDE)



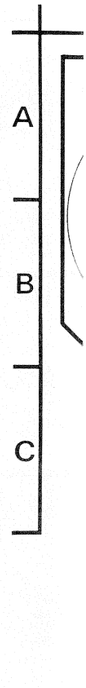
POWER SUPPLY P.C.B. (SOLDERING SIDE)

D001	B-2
D002	C-1
D005	E-3
D006	E-3
D007	B-3
D008	D-3
Q002	B-3
Q004	D-3
Q005	F-3
Q006	B-3
Q008	C-3

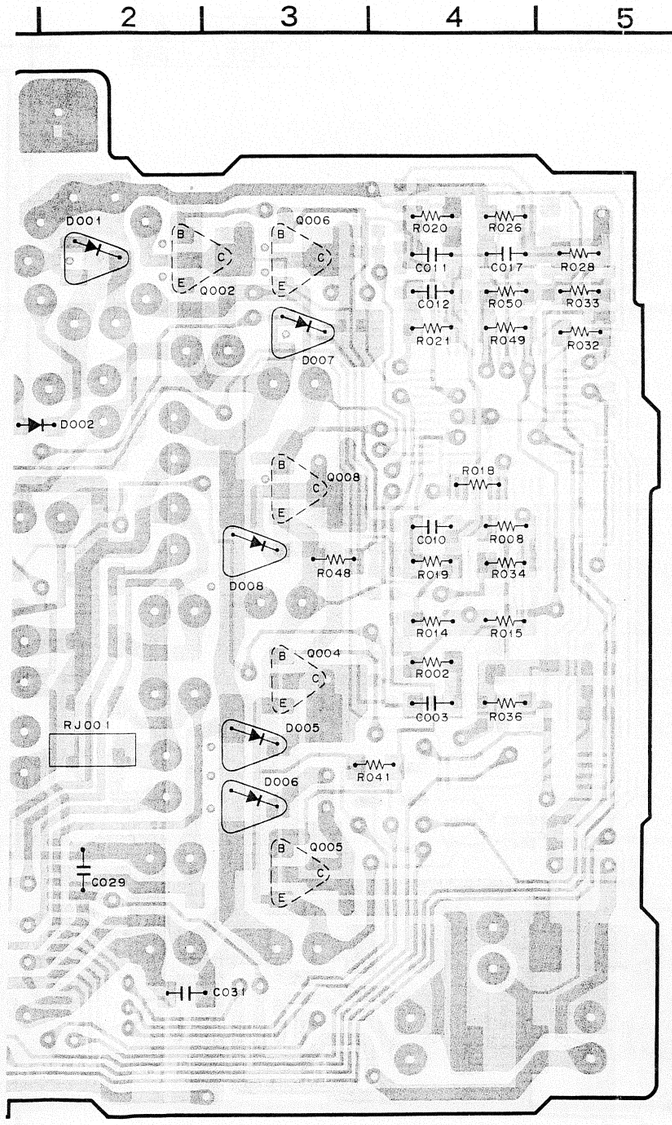


FUSE BATTERY

D1	A-1
IC1	B-2

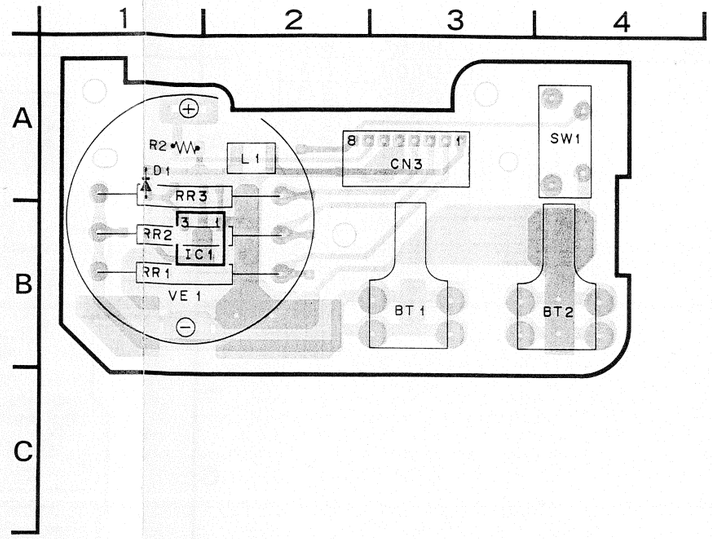


.B. (SOLDERING SIDE)



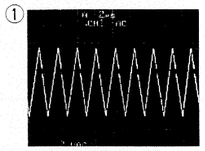
FUSE BATTERY P.C.B.

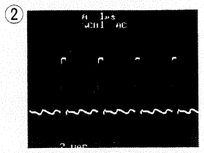
D1	A-1
IC1	B-2

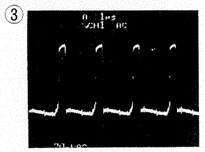


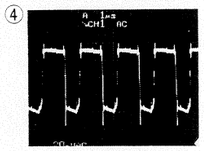
SIGNAL WAVEFORMS

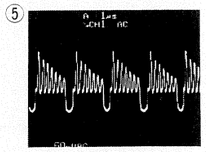
POWER SUPPLY P.C.B.

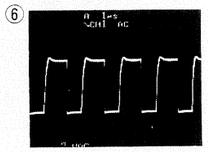
① 
(REC)

② 
(REC)

③ 
(REC)

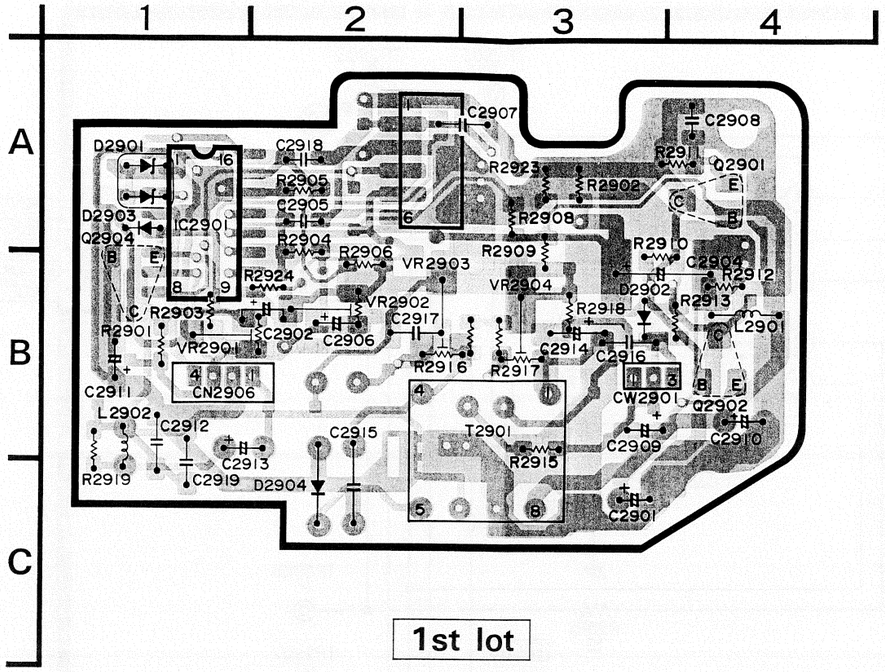
④ 
(REC)

⑤ 
(REC)

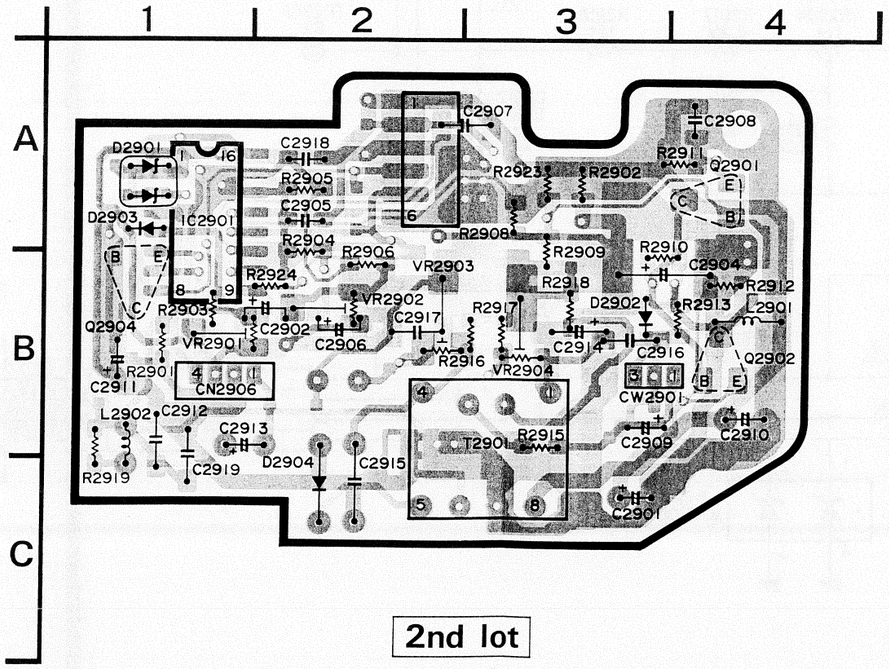
⑥ 

CIRCUIT BOARD DIAGRAM EVF P.C.B.

D2901	A−1
D2902	B−3
D2903	A−1
D2904	C−2
IC2901	A−1
Q2901	A−4
Q2902	B−4
Q2904	B−1
VR2901	B−1
VR2902	B−2
VR2903	B−2
VR2904	B−3



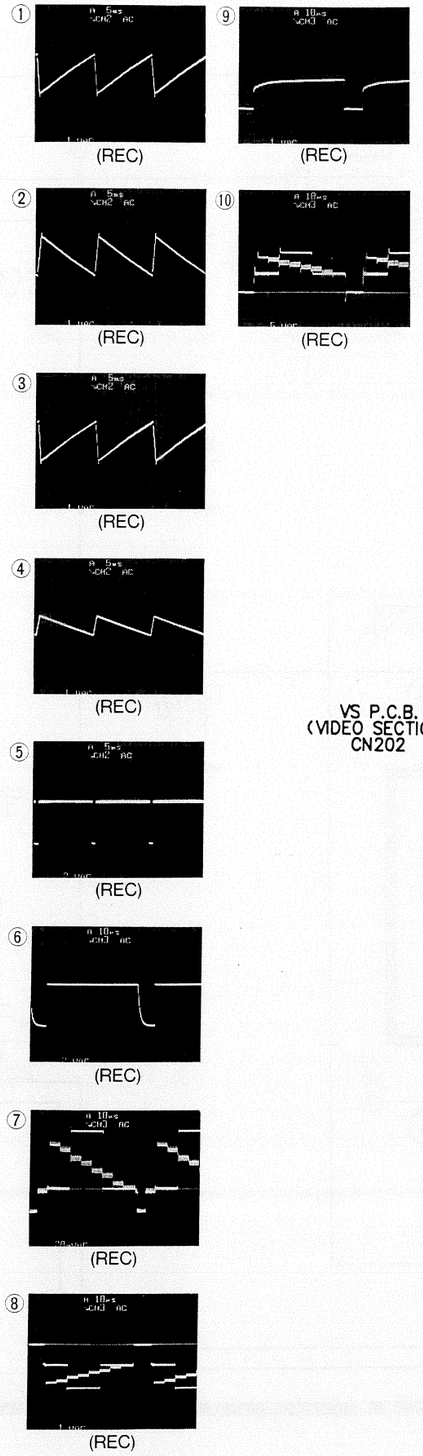
1st lot



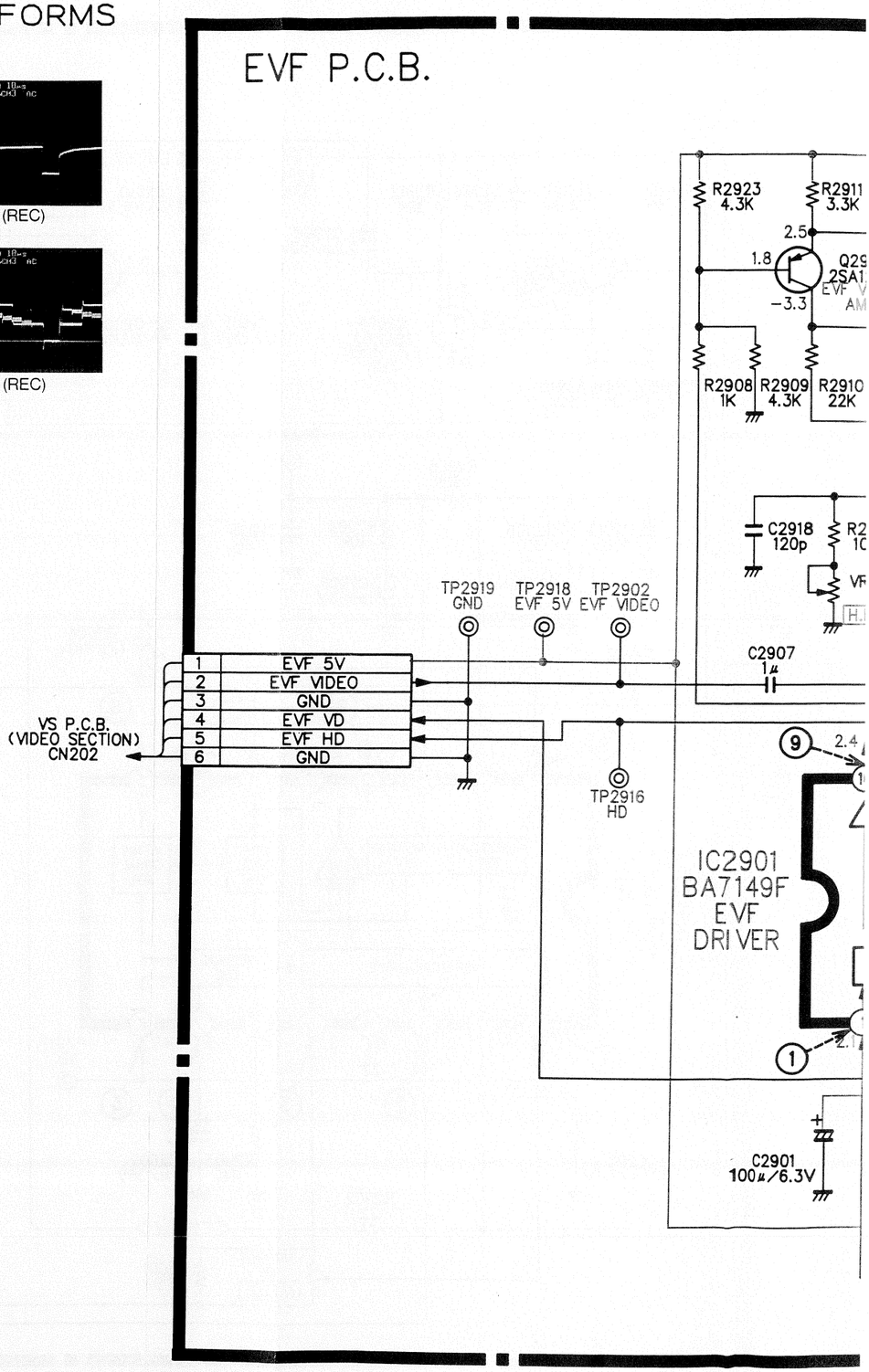
2nd lot

D2901	A−1
D2902	B−3
D2903	A−1
D2904	C−2
IC2901	A−1
Q2901	A−4
Q2902	B−4
Q2904	B−1
VR2901	B−1
VR2902	B−2
VR2903	B−2
VR2904	B−3

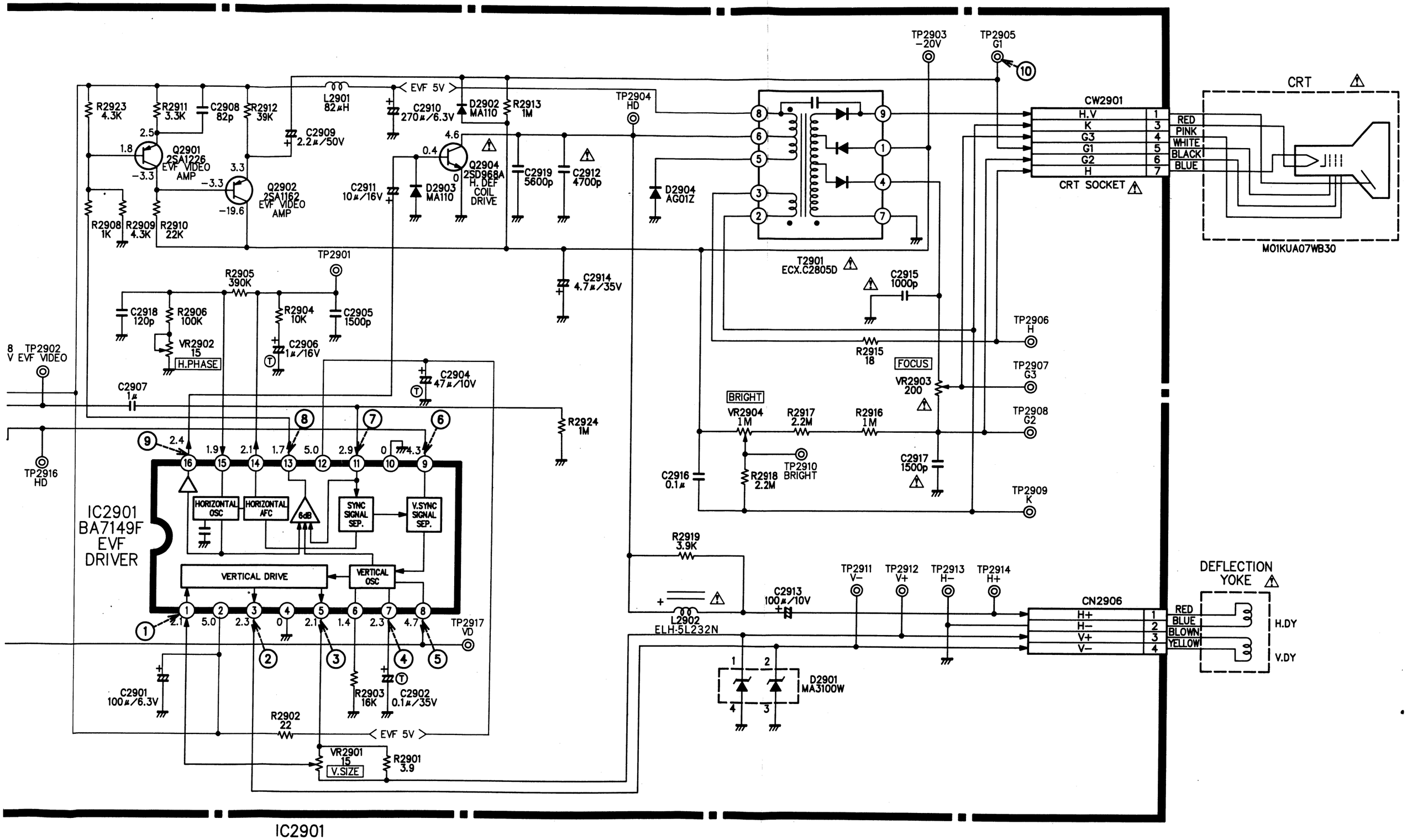
SIGNAL WAVEFORMS



SCHEMATIC DIAGRAM EVF P.C.B

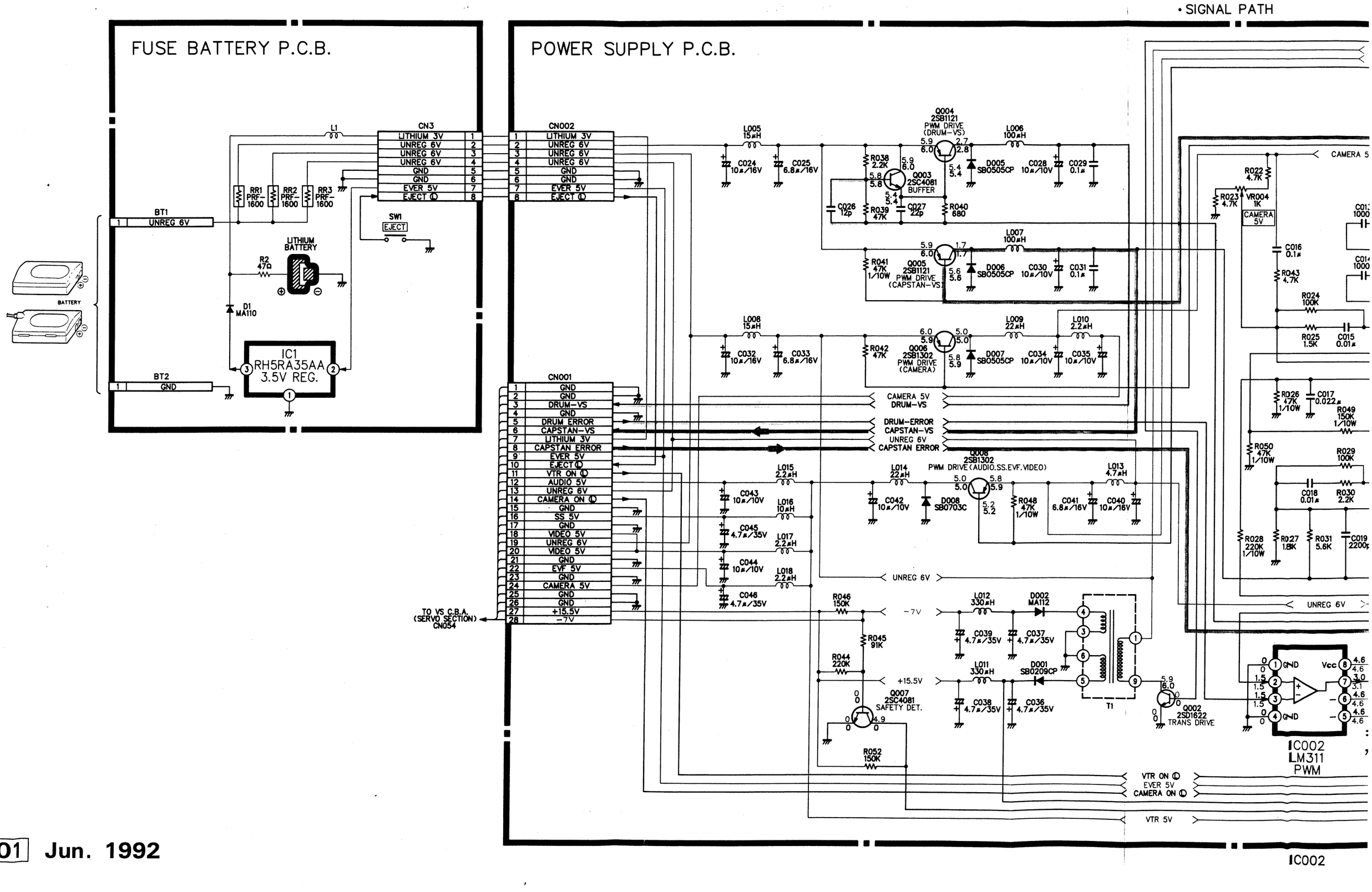


AM EVF P.C.B.



IC2901

SCHEMATIC DIAGRAM POWER SUPPLY P.C.B., FUSE BATTERY P.C.B.



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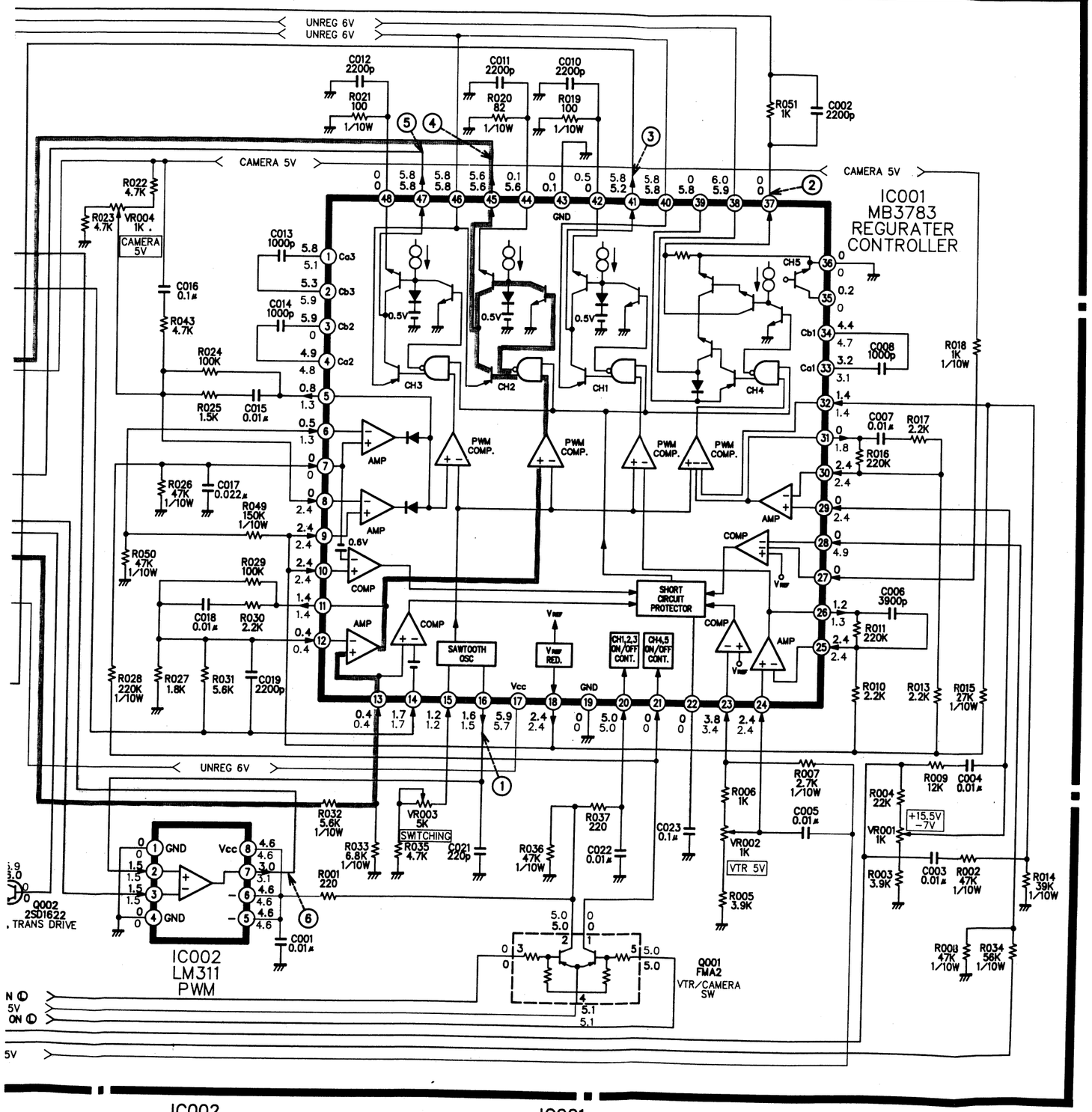
• SIGNAL PATH　　DRUM PWM (ORANGE)　　CAPSTAN PWM (BLUE)



IC002　　IC001

BLOCK DIAGRAM AUDIO-VIDEO SECTION(UC20E)

1 2 3 4 5 6 7 8 9 10

A B C D E F

○ SIGNAL PATH ▭ REC SIGNAL (RED) ▬▬ PB SIGNAL (RED)

EVF P.C.B.

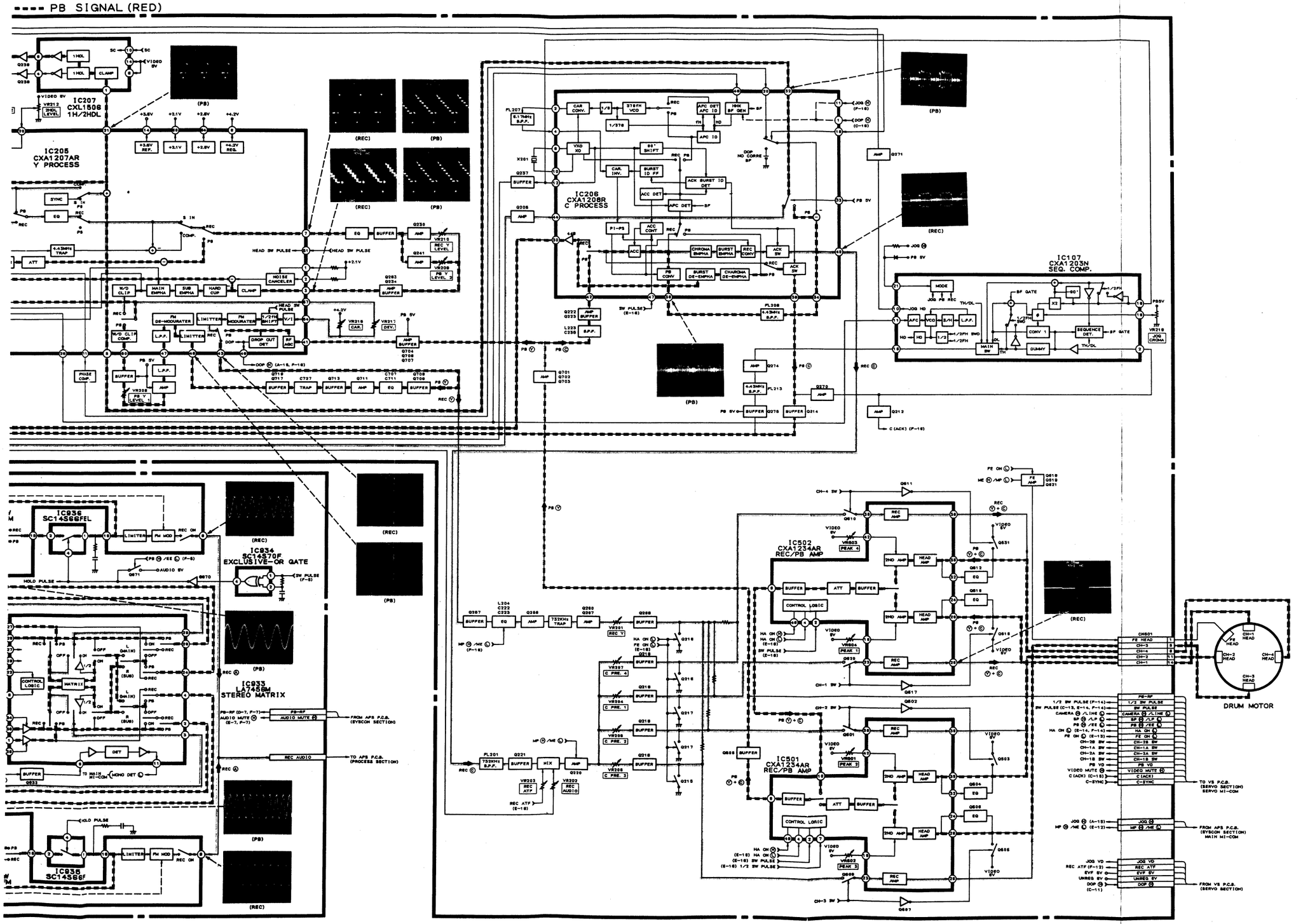
TERMINAL P.C.B.

HEAD PHONE P.C.B.

VS P.C.B. (VIDEO SECTION)

APS P.C.B. (AUDIO SECTION)

PB SIGNAL (RED)



CIRCUIT BOARD DIAGRAM VS P.C.B.(UC20E)

VS P.C.B. (COMPONENT SIDE)

< NOTICE >

VS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

○ : Soldering side ⟷ Component side

Ⓖ : Soldering side (Component side) ⟷ Ground

Ⓑ : Soldering side (Component side) ⟷ Power Supply

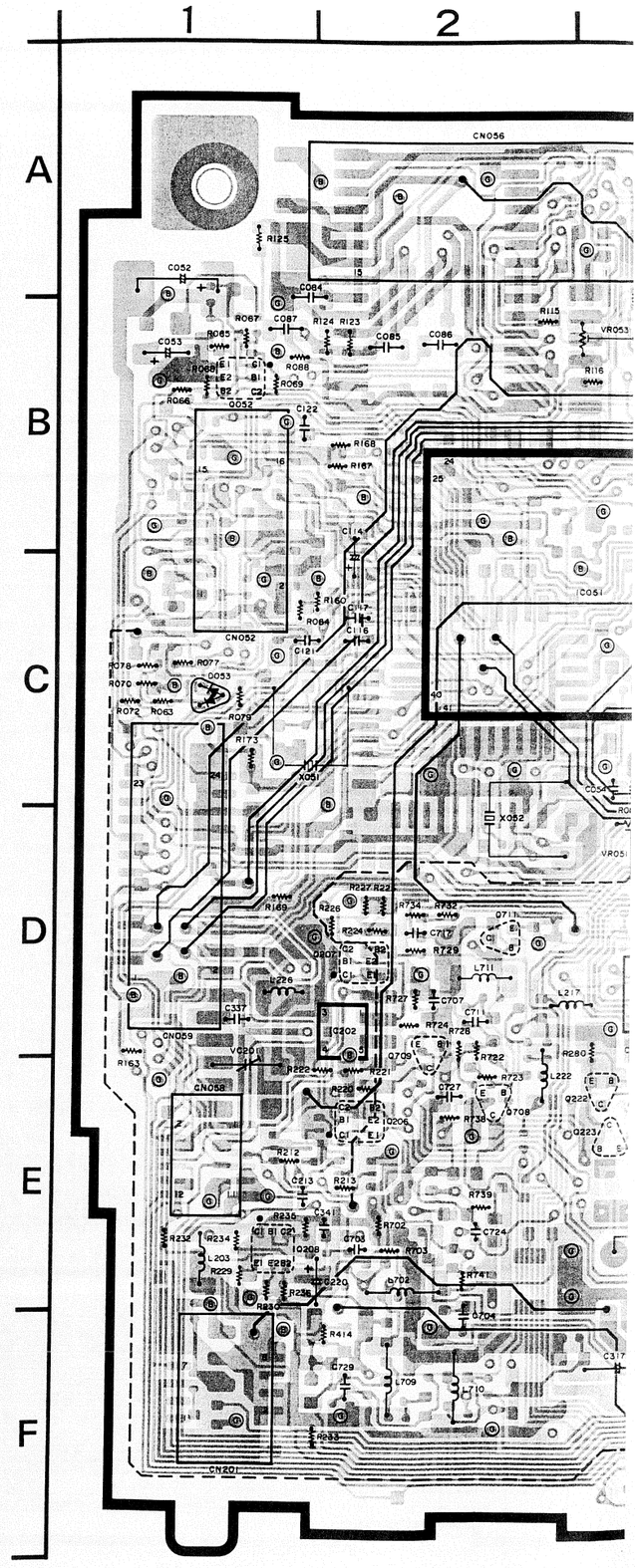
And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

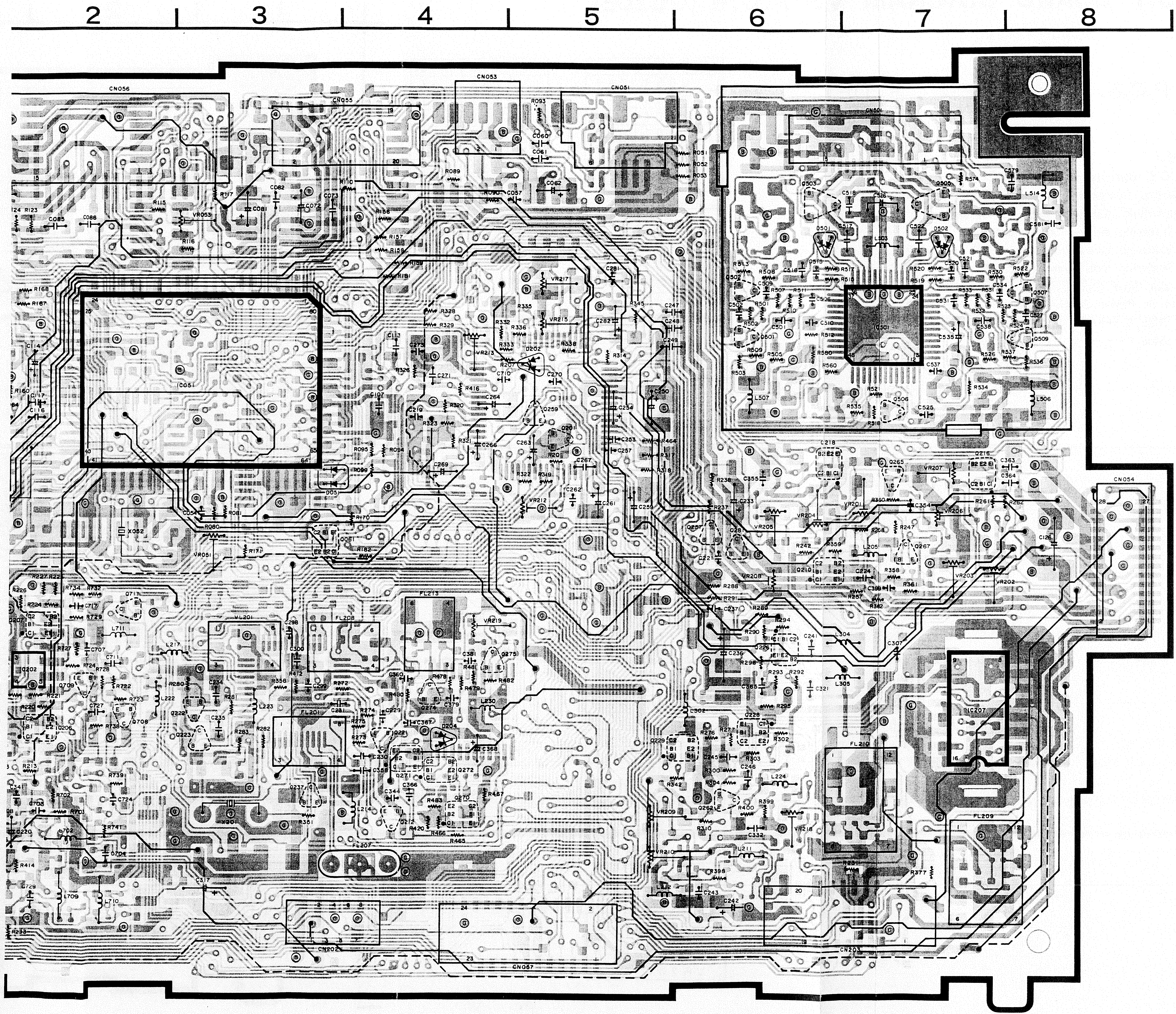
Blue (———) : Power Supply layer

Blue (– – – –) : Ground layer

D051	C-3
D053	C-1
D202	B-5
D204	E-4
D501	B-6
D502	B-7
IC051	C-3
IC202	D-2
IC207	E-7
IC501	B-7
Q052	B-1
Q061	D-3
Q201	C-5
Q206	E-2
Q207	D-2
Q208	E-1
Q210	D-6
Q212	E-4
Q216	C-7
Q218	C-6
Q221	E-4
Q222	E-3
Q223	E-3
Q226	D-6
Q228	E-6
Q229	E-6
Q237	E-3
Q257	D-6
Q259	C-5
Q262	E-6
Q265	C-7
Q267	D-7
Q270	E-4
Q271	E-4
Q272	E-4
Q274	E-4
Q275	E-4
Q281	D-6
Q501	B-6
Q502	B-6
Q503	B-6
Q505	B-7
Q506	C-7
Q507	B-8
Q509	B-8
Q709	D-2
Q708	E-2
Q711	D-2
VC201	D-1
VR051	D-3
VR053	B-3
VR201	C-7
VR202	D-7
VR203	D-7
VR204	C-6

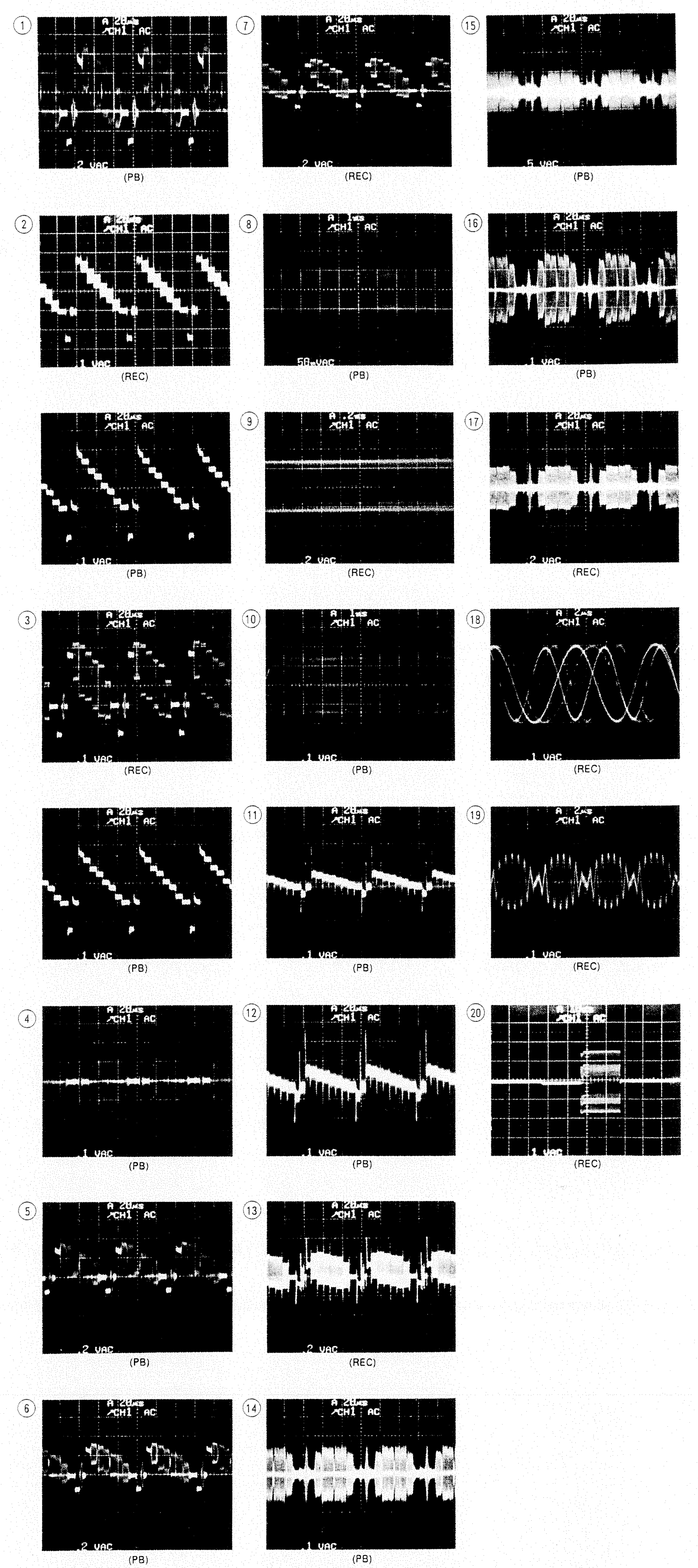
VR205	C-6
VR206	C-7
VR207	C-7
VR208	D-6
VR209	E-5
VR210	F-5
VR212	C-5
VR213	B-4
VR215	B-5
VR217	B-5
VR218	E-6
VR219	D-4



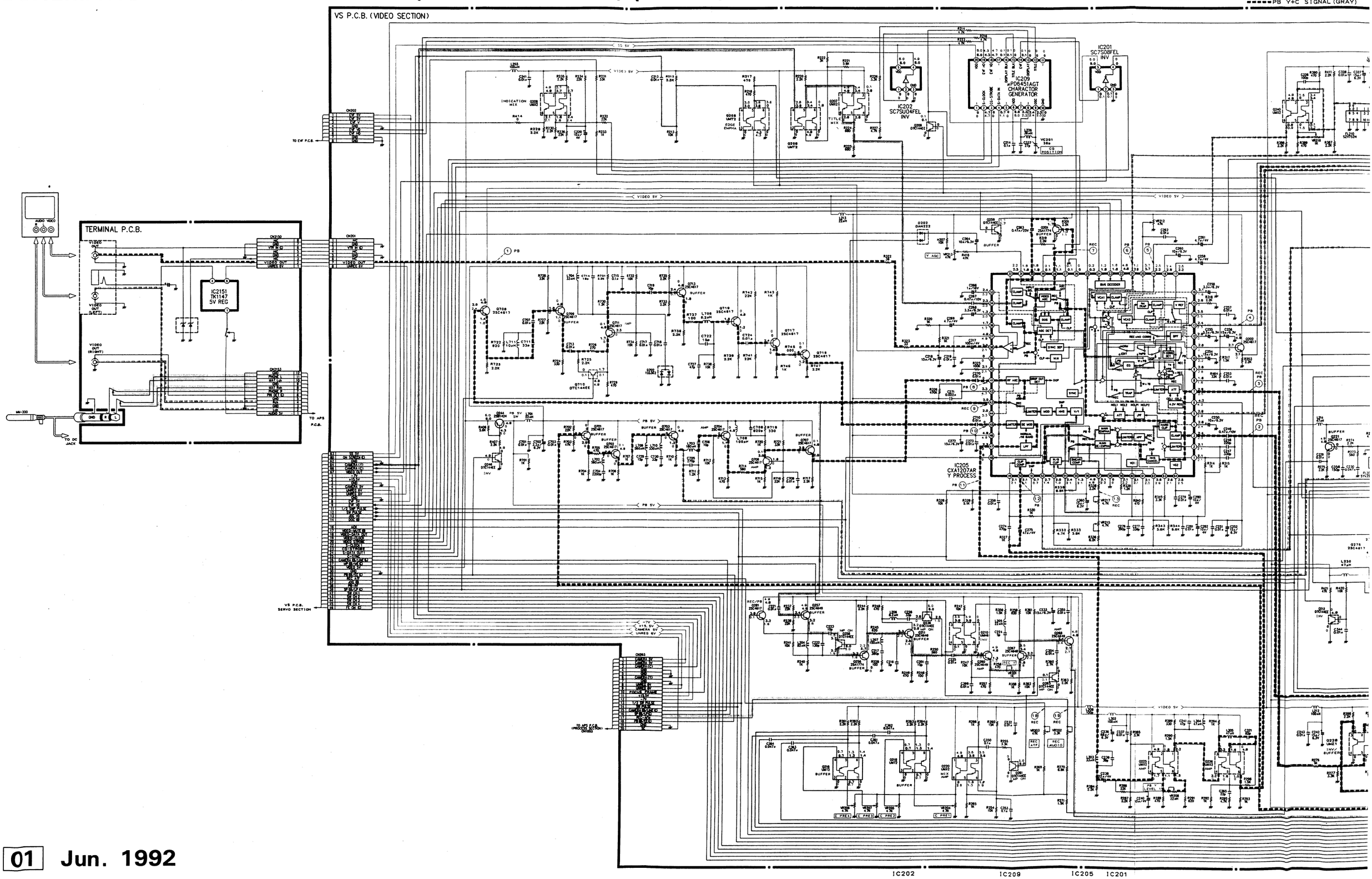


SIGNAL WAVEFORMS

VS P.C.B. (VIDEO SECTION)



SCHEMATIC DIAGRAM VS P.C.B.(VIDEO SECTION) (UC20E)



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SIGNAL PATH

REC Y+C SIGNAL (GRAY)
PB Y+C SIGNAL (GRAY)

REC Y SIGNAL (BLUE)
PB Y SIGNAL (BLUE)

REC C SIGNAL (ORANGE)
PB C SIGNAL (ORANGE)

REC A SIGNAL (RED)
PB A SIGNAL (RED)

IC207
CXL1506
1H/2HDL

IC206
CXA1208R
C PROCESS

IC210
CXA1203N
SEQ.COMP

IC501
CXA1234AR
REC/PB AMP

IC502
CXA1234AR
REC/PB AMP

IC206 IC210 IC207

IC501 IC502

CIRCUIT BOARD DIAGRAM VS P.C.B.(UC20E)

VS P.C.B. (SOLDERING SIDE)

< NOTICE >

VS P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

○ : Soldering side ⟷ Component side

Ⓖ : Soldering side (Component side) ⟷ Ground

Ⓑ : Soldering side (Component side) ⟷ Power Supply

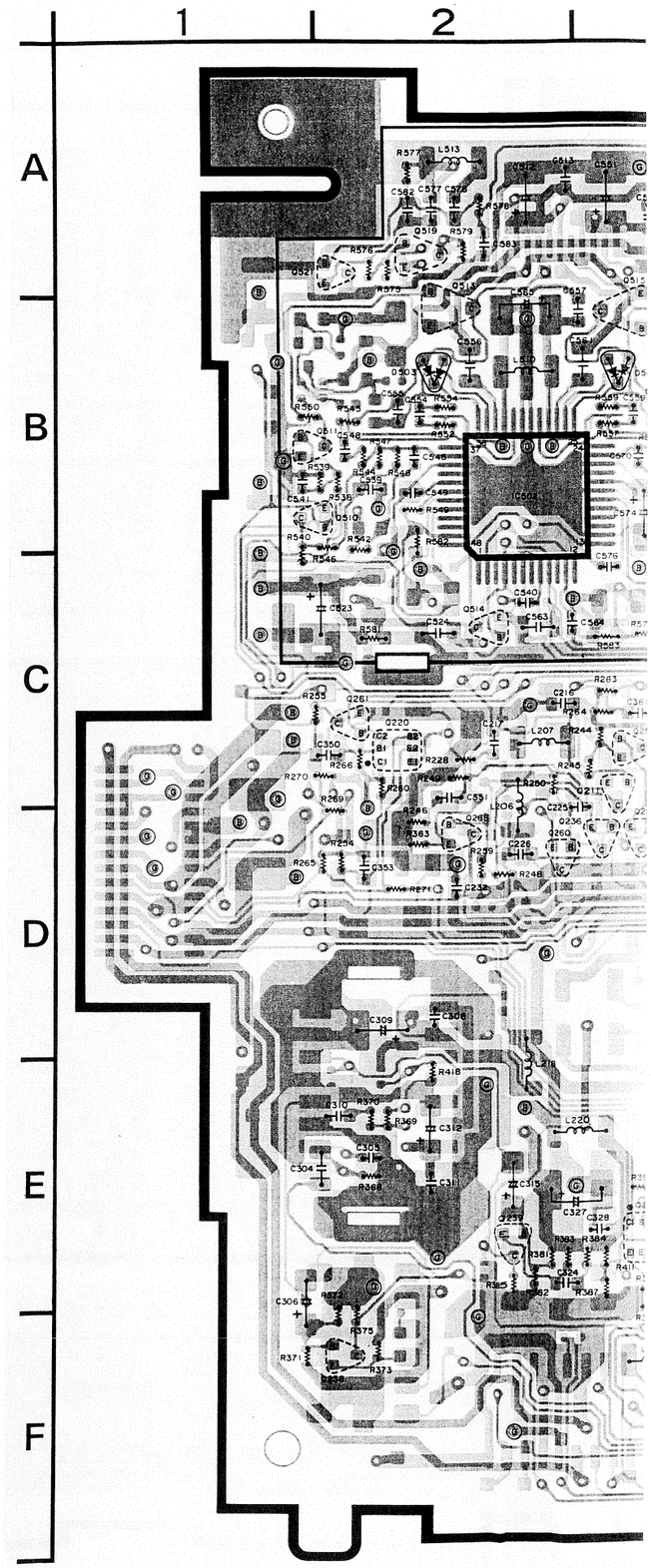
And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

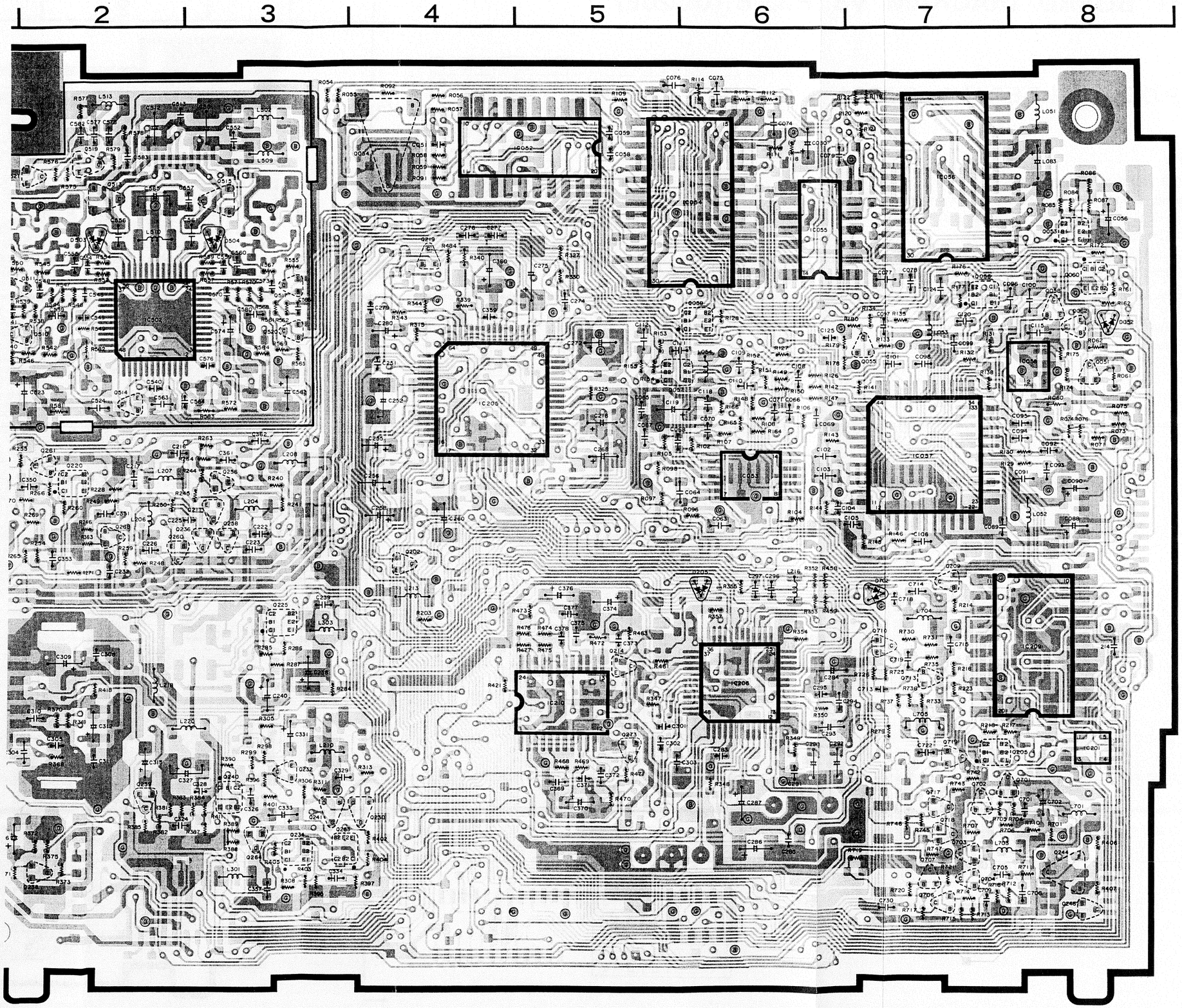
Blue (———) : Power Supply layer

Blue (– – – –) : Ground layer

D052	B-8
D205	D-6
D503	B-2
D504	B-3
D702	D-7
IC052	A-5
IC053	C-6
IC054	B-6
IC055	B-6
IC056	A-7
IC057	C-7
IC058	C-8
IC201	E-8
IC205	C-4
IC206	E-6
IC209	D-8
IC210	E-5
IC502	B-2
Q051	C-8
Q053	B-8
Q054	A-4
Q055	B-7
Q056	B-7
Q057	C-6
Q058	B-8
Q059	B-6
Q060	B-8
Q062	B-8
Q202	D-4
Q205	E-7
Q209	D-7
Q211	C-3
Q214	D-5
Q219	B-4
Q220	C-2
Q225	D-3
Q230	E-4
Q232	E-3
Q234	F-3
Q236	D-3
Q238	F-2
Q239	E-2
Q240	E-3
Q241	E-3
Q244	F-8
Q246	F-8
Q256	C-3
Q258	D-3
Q260	D-2
Q261	C-2
Q263	E-3
Q264	F-3
Q268	D-2
Q273	E-5
Q510	B-2

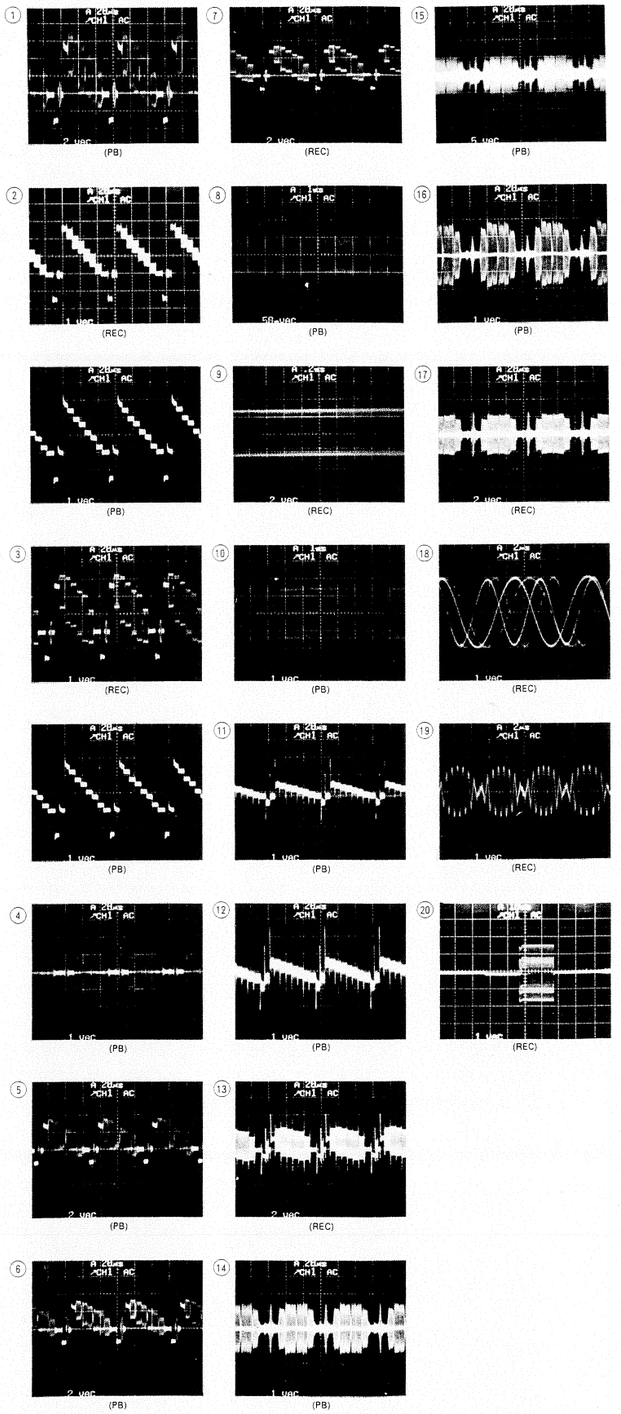
Q511	B-2
Q513	B-2
Q514	C-2
Q515	B-3
Q517	B-3
Q519	A-2
Q520	B-3
Q521	A-2
Q701	E-8
Q702	E-7
Q703	F-7
Q704	F-7
Q706	F-7
Q707	F-7
Q710	D-7
Q713	E-7
Q717	E-7
Q718	E-7
Q719	E-7





SIGNAL WAVEFORMS

VS P.C.B. (VIDEO SECTION)



SCHEMATIC DIAGRAM VS P.C.B.(VIDEO SECTION) (UC20E)

•SIGNAL PATH ▬▬ REC Y+C SIGNAL (GRAY) ▬ ▬ ▬ PB Y+C SIGNAL (GRAY)

VS P.C.B. (VIDEO SECTION)

TERMINAL P.C.B.

IC2151 TK1147 5V REG

IC201 SC7508FEL INV

IC202 SC7SU04FEL INV

IC209 μPD6451AGT CHARACTOR GENERATOR

IC205 CXA1207AR Y PROCESS

TO DC JACK

TO APS P.C.B.

10 EW P.C.B.

VS P.C.B. SERVO SECTION

TO APS P.C.B. (PROCESS SECTION)

IC202 IC209 IC205 IC201

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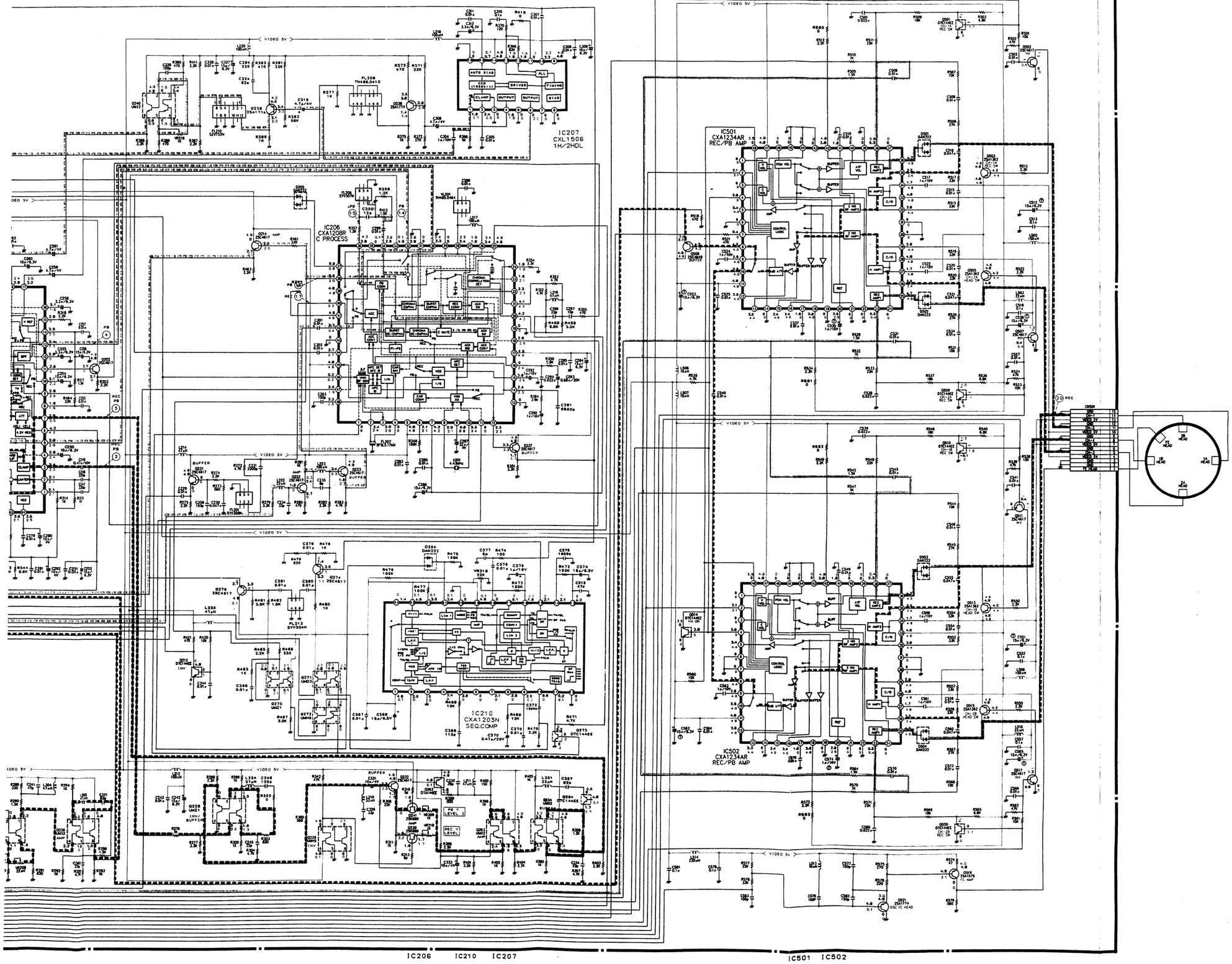
•SIGNAL PATH ▬▬ REC Y+C SIGNAL (GRAY) ▬▬ PB Y+C SIGNAL (GRAY) ▬▬ REC Y SIGNAL (BLUE) ▬▬ PB Y SIGNAL (BLUE) ▬▬ REC C SIGNAL (ORANGE) ▬▬ PB C SIGNAL (ORANGE) ▬▬ REC A SIGNAL (RED) ▬▬ PB A SIGNAL (RED)



Canon